

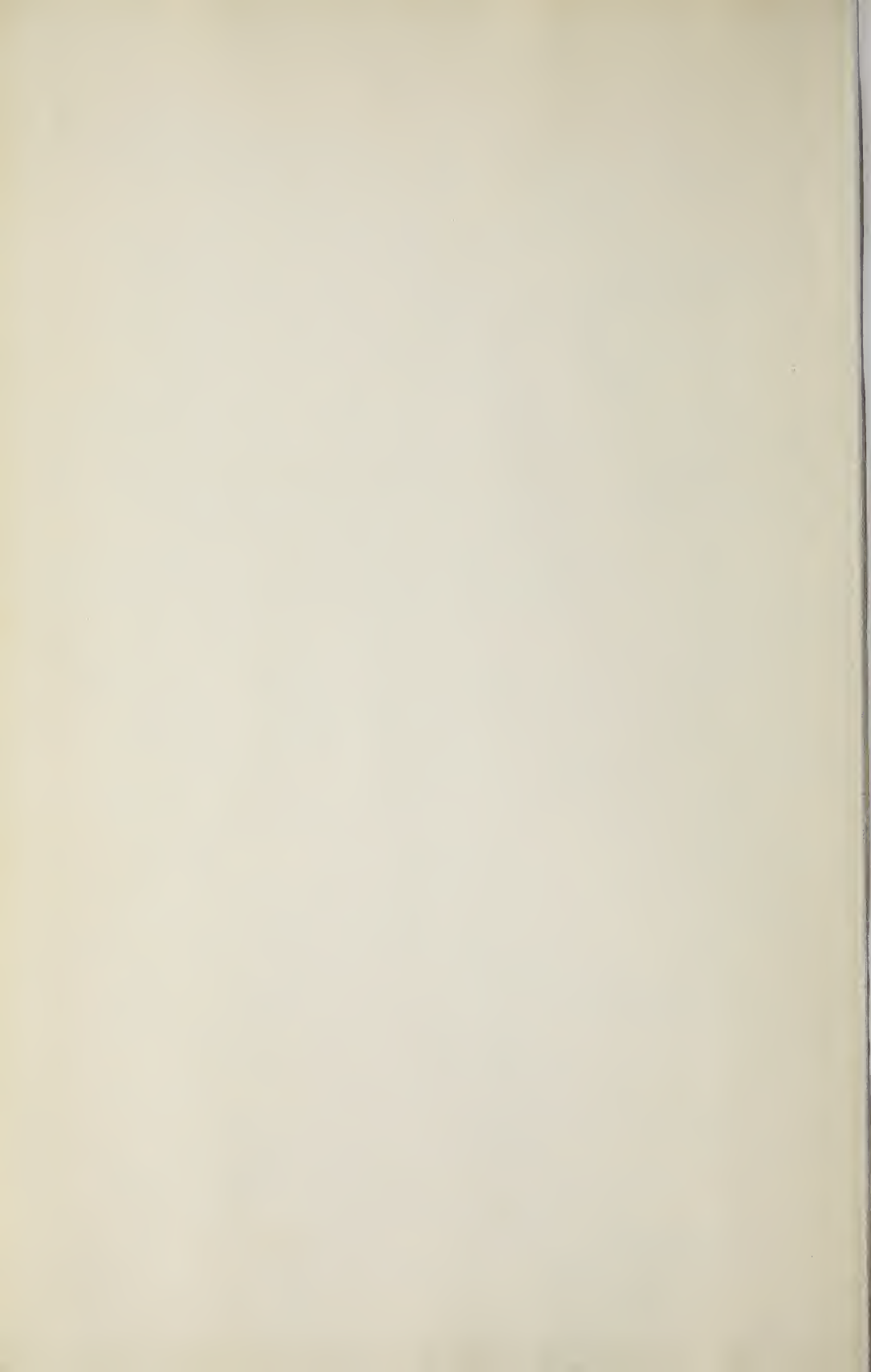
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SMALL PLANT MANAGEMENT



SMALL PLANT MANAGEMENT

A Guide to Practical, Know-How Management



A Small Plant Committee Research Study

Prepared under the Auspices of the Management Division of
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Edited by EDWARD H. HEMPEL

McGRAW-HILL BOOK COMPANY, INC.
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SMALL PLANT MANAGEMENT

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PREFACE

It gives me special satisfaction and pleasure to introduce this study on Small Plant Management to managers of small plants and to others interested in similar fields.

I believe this book to be an outstanding contribution to the science of management. It fills a definite need for up-to-date, practical knowledge of management techniques especially suited for application in small plants or technical service units. It offers modern concepts, procedures, and methods which stem but are different from the various scientific-management principles developed in the early part of this century. By now, economic, technological, and social conditions have changed so much that management wants to be brought in line.

The systematic study of small plant activities in different industries, located in widely separated parts of the country, helped considerably in determining the timely fundamentals of management which should be applied for their effectiveness and practicability not only in small plants but possibly also in large manufacturing enterprises.

If one considers, as does the U. S. Department of Commerce, only plants with less than 100 employees as small plants, there are now 216,300 establishments of this kind in this country. But if one draws the dividing line at 250 wage earners, as some do, then the number of small plants exceeds 230,600, and covers 95.8 per cent of all manufacturing establishments. About 250,000 small repair shops, dealerships, and food establishments, who do some kind of technical work, can well be added to these numbers.

This book, it is hoped, will give them the kind of knowledge and the encouragement which they may need to carry on, not only in good times, but also during difficult years that may come.

I am proud of the work which the Management Division and the members of the Small Plant Committee did. As president of the American Society of Mechanical Engineers, I want to express my sincere appreciation to them, to all the sections of the Society that have participated, and to all others who, as members of other societies or organizations, have contributed to this project.

NEW YORK, N.Y.
December, 1949

JAMES M. TODD
President, ASME



THE PROJECT AND ITS FINDINGS

The Small Plant Committee was established in 1946 by the Management Division of the American Society of Mechanical Engineers at the suggestion of Dr. Edward H. Hempel, who for many years has been analyzing the activities of large and small plants. He is familiar with their operating needs and in his teaching has taken a special interest in small plant management.

The formation of the Committee was wholeheartedly endorsed by Mr. Clarence E. Davies, secretary of the ASME. Ever since its foundation he has had a guiding hand in the work of the Committee.

The first objective was to determine with the assistance of practical men, familiar with small plants, the specific kind of thinking and action that would give best operation, progress, and success in small plants and similar establishments.

In the spring of 1948 carefully prepared outlines for 20 topics were ready, and they were approved by the executive committee of the Management Division as work program and research subjects. This information was sent to the 64 local sections of the Society, and their chairmen and secretaries were invited to help in finding qualified authors. Their recommendations were supplemented by those of leading trade associations, professional societies, and government departments.

Working independently and entirely uninfluenced in the expression of their thoughts, the authors have produced a most interesting, useful, complete, and integrated treatise on know-how management. It is their individual as well as composite expression of what should be best management for small plants and possibly also for larger ones.

Know-how management is practical management. It aims to manage, as it well must in the small plant, with a maximum of effectiveness and a minimum of management apparatus. It desires to obtain a maximum of work and to achieve a minimum of cost per unit in order to reach the greatest number of buyers who thus create and maintain the greatest number of jobs.

Know-how management is not content with principles or first thoughts; it tries to achieve the greatest satisfaction of human needs and steady progress for all by improved procedures of planning, organizing, operating, supervising, and controls, all based on facts and careful thinking. It aims to use techniques of work which represent the best knowledge of our times and combine men, facilities, and methods for best results in ALL activities.

Part One of the study presents four chapters on economic subjects which every small plant manager should know. Part Two discusses the know-how in detail and fundamental procedures which might be used. Part Three explains how know-how can be applied in actual work. And Part Four aims to appraise the outlook for small plants at home and abroad.

Because each author was at liberty to cover his subject as fully as he desired, a few minor overlaps can be found in the text and even some differences of opinion. It is hoped that the freedom of thought which was upheld will stimulate the reader to add his thinking to that of the authors. As actual conditions prove, the need for best management is great indeed.

I should be remiss if I did not take this opportunity to express the deep appreciation of the Management Division to Dr. Edward H. Hempel, not only for conceiving the idea of this work, but also for his untiring, selfless, devoted efforts in carrying it through to this successful conclusion. His interest and devotion to the task have been an inspiration to all of us.

YORK, PA.
December, 1949

J. KEITH LOUDEN
Chairman, Executive Committee
Management Division

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Each one who has contributed to this study has given his knowledge, experience, and assistance in order to help those who form a most important part of the industrial and economic community. The names of the members of the Small Plant Committee have been presented. But there are also others who gave recognition and personal assistance to the project which is hereby gratefully acknowledged:

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U.S. Department of Commerce, Office of Domestic Commerce

Charles F. Hughitt, Chief, Small Business Division

U.S. Senate

Hon. Ralph E. Flanders, Senator from Vermont

And because of her valuable assistance

Luisa Frías de Hempel

EDWARD H. HEMPEL, Chairman
Small Plant Committee

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SMALL PLANT MANAGEMENT



PART ONE

SMALL PLANTS AS ECONOMIC FACTORS

*This part presents
some economics
which every small plant
manager should know*

“Reduced to its essentials then, the problem of independent business in the postwar period is the problem of keeping open the way to growth and development. This means assurance that every business enterprise, whether it be large or small, shall have equal opportunity to buy and sell goods and services in a free market. The success or failure of individual business establishments must result entirely from the efficiency with which they can provide the things that are wanted at the price, the time, and the place acceptable to their customers. We call this free competition, and we go to the greatest length to preserve it.”

ROBERT WOOD JOHNSON

Ex-Chairman, Smaller War Plants Corporation

“But, General Johnson—,” p. 125.

CHAPTER 1

THE ECONOMIC AND INDUSTRIAL IMPORTANCE OF SMALL PLANTS

BY

A. D. H. KAPLAN, *Economist*
The Brookings Institution
*Washington, D.C.*¹

In any appraisal of the conditions prerequisite to the growth and survival of a system of private competitive enterprise, the role of the small manufacturing plant is a strategic factor. It is natural, in thinking of American industry, to be impressed with the large scale on which it is operated, combining advanced technology and business know-how with a wealth of plant and equipment unmatched by any other nation. But the highly mechanized industry of corporate giants does not start full grown, nor can it stand alone. It represents a gradual development of the ideas and skills that have been and will be generated by the smaller workshops of the nation. Large-scale industry is fed by and feeds to thousands of smaller suppliers and customers that link the chain from raw material to consumer. On their own scale they match the alertness of the larger enterprise in their pursuit of new ideas and improved processes.

EARLY STAGES IN AMERICAN INDUSTRIAL DEVELOPMENT

As with every pioneer territory, our national economy had its beginnings in agriculture and extractive industries catering to basic wants for food, lumber, cotton, and other raw materials. During the pre-Revolutionary era the equipment and skills allowed to the colonists were generally limited by the mother country, which reserved the colonial market for its own manu-

¹ The author was, during the war, economist for the Special Committee on Post War Policy of the House of Representatives. He also was regional price administrator for the Office of Price Administration. For the Committee on Economic Development he prepared the study on *Small Business: Its Place and Problems*. New York, McGraw-Hill Book Company, Inc., 1948.

facturers. For economic survival, the average settler had to become mechanically adept. Well into the nineteenth century the representative American family, outside the largest cities, constituted a household workshop in which there was some knowledge of how to make cloth, fashion clothes or furniture, devise implements for tilling the soil, make nails, build a house. Out of a population of tinkerers there emerged the more skilled hands which, though confined to crude tools of their own making, nevertheless were able to supply their neighbors with fabricated goods. In time, ingenious minds improved on the tools and machines denied them by the European restrictions on their exportation, and thus paved the way for America's technological leadership in our day.

In the reports on manufactures which Alexander Hamilton submitted to the Congress, he listed no less than 51 manufacturing handicrafts that were established with some degree of promise in the United States at the beginning of our national history. Under Hamilton's stimulus, *bounties* were offered to those who would carry forward our production of textiles and leather goods, the opening up of foundries and sawmills, and the development of shipbuilding as a natural American industry. Invention was encouraged by legislation passed in 1790 and the inauguration of a liberal policy on patents. Under such encouragement native talent developed potent devices as wide apart as the cotton gin, the steamboat, the mechanical reaper, and the sewing machine.

The surge of Yankee ingenuity received almost too free encouragement under our first patent law. Patent rights were granted to practically every applicant, with little regard for the merit or novelty of his invention. To bring order out of the conflicting claims among the early manufacturers, the patent system was overhauled in 1836, with more sophisticated legislation. During the years 1820 to 1830, the average number of patents issued in the United States was 535, as compared with the annual average of 145 in Great Britain. The easy patent policy at the time may have swelled the number unduly. Yet even under the stricter examinations established by the law of 1836, the number of American patents continued to increase, so that they averaged 646 a year during the decade of the 1840's, mounted to 2,525 annually during the decade of the 1850's, and were well above 5,000 per annum in the 1860's.

The main stream of progress in industrial technology has been an accumulation of many minor improvements which in the aggregate made a substantial contribution to the technical advancement of the nation. On the industrial side there developed in the United States a democracy of small-scale craftsmanship and inventiveness, encouraged by expanding opportunity to cooperate in perfecting the equipment for raising the level of the economy as a whole. It is a notable feature of our national history that

American mechanical genius was not confined to an aristocracy of technical traditions but had a diffusion throughout all ranks of labor. The sons of farmers contributed as freely as did the immigrant craftsmen of the Old World to the building of the nation's leadership in industrial arts. That feature of our national development was especially noticed by foreign observers, whose writings made much of the large number and variety of new contrivances and new ways of doing old things that they saw among the pioneers of the New World.

THE SMALL PLANT IN MORE RECENT YEARS

World War II stimulated spectacular growth among both large and small plants. Public interest has been focused upon the expanded dimensions of our giant enterprises in the postwar period. In 1948 ² the Standard Oil Company of New Jersey was only one of six petroleum companies each of which had sales of a billion dollars or more. General Motors' sales of its automotive and related output aggregated \$4.7 billion. Swift and Armour together accounted for more than \$4 billion of sales in meats and by-products. The U. S. Steel Corporation had total sales of \$2.5 billion. The sales of General Electric were nearly \$1.6 billion. Those of the Du Pont corporation were just under a billion dollars. All told, no less than 19 industrial companies were in the billion-dollar class as to either total assets or sales.

Against figures of that magnitude, the small manufacturing plant may appear to have receded to a very insignificant position in the nation's economy. But such an impression distorts the perspective. As a matter of record, the small plant made an impressive showing in World War II, both in its physical contributions and in its financial position. The large corporations were the first to be mobilized for war on the industrial front. But it became apparent before long that the large corporations, though basic to the mass-production effort on an unprecedented scale, were nevertheless unable by themselves to give us the speed and variety of activities needed to carry on global war. When the talents and facilities of the small plants were more fully introduced into the picture, there followed a substantial increase in the speed and efficiency with which industry backed up the military effort. Because the small plant was usually cast in the role of subcontractor, the full contribution of the small enterprise has not been separately measured. Yet it was typical of the huge prime contracts that they were filled through the combined efforts of many small enterprises—often more than 2,000 catering to a single prime contract. These strategic feeders made possible the spectacular total accomplishment of our wartime industrial machine.

² Standard & Poor's, *Corporation Records* (1948).

In the process, many a small enterprise attained a wartime growth that on a percentage basis was greater than that achieved in the big-business sector. A study by the Securities and Exchange Commission of the 1,000 largest manufacturing corporations in the country over the 4 years 1940 through 1943 showed a gain in their aggregate tangible net worth during that period of slightly over 18 per cent. A parallel study of 1,785 smaller manufacturers (all under \$1 million) by Dun and Bradstreet showed that the increase in tangible net worth ranged from 34 per cent for the 417 manufacturers in the \$500,000 to \$1 million group to 60 per cent for the 138 manufacturers in the below \$50,000 group. Similarly, the study of wartime profits by the Robert Morris Associates, in 1945, indicated that substantially higher rates were earned by the smaller manufacturing corporations than were earned by the large-sized companies. Related studies by the U. S. Department of Commerce have confirmed these relationships.

The small plant of today is the product of a century of transition in organization and processes. In its use of present-day equipment and engineering, it bears little resemblance to the home shop of the early nineteenth century, and it may contain the seed of a giant enterprise prominent in tomorrow's headlines. Virtually every one of the industries in which we see mass-scale enterprise exemplified today has a history of development from small beginnings under individual proprietorship. Many owners desired to keep their plants small. But many familiar names in today's big business can be traced back to the families which started the enterprises in small-scale competition. Labels like Eastman Kodak, Du Pont, Ford, and International Harvester are the outgrowth of small enterprises started, respectively, by George Eastman, E. I. du Pont de Nemours, Henry Ford, and Cyrus McCormick. They are typical of the half hundred corporate leaders that had their beginnings as individual ventures.

THE DATA ON AMERICAN MANUFACTURES

If we trace the growth of American manufactures through successive Censuses we find an apparent decline in the number of manufacturing establishments listed since the 1880's and 1890's. The data reflect the transition from part-time home craftsmanship to modern factory operation.

Thus, the Census of 1899 put the number of manufacturing establishments at more than half a million, while it was less than 200,000 for the year 1939. Through the year 1899 the Census listed "hand and neighborhood industries," many of them in the home, along with factories, to get the total number of establishments. From 1899 through 1914, manufacturing establishments included those with annual output of \$500 or over. Beginning with 1919, however, a manufacturing establishment—as distinguished from

a service or repair shop—was defined for Census purposes as one with annual output of not less than \$5,000.

These changes in definition were in line with the changing characteristics of the manufacturing industries. In 1899 only two-fifths of the total number of establishments listed were factories and shops separated from the home and with annual output above \$500. In the 1914 Census the change in definition of a manufacturing establishment, from one with \$500 or more of annual output to one with \$5,000 or more, had the effect of reducing the number from 268,450 to 173,588. Taking that last figure, there was a fairly consistent rise in the number of manufacturing establishments from 1914 to 1929. During the depression period 1929–1933, there appears to have been a net loss of one-third in the number of manufacturing establishments. The numbers were substantially restored by 1939, when the Census gave 184,230 as the number of establishments with output of \$5,000 or more (see Table 1).

In contrast to the general decline in the number of commercial business firms during World War II, manufactures held their numbers and even showed a slight increase. The postwar spurt has been phenomenal. As of the end of 1947, the Department of Commerce estimated that there were 319,000 manufacturing firms in operation.³

At the turn of the century, approximately 5 million persons earned their livelihood from manufactures. Between 1899 and the end of World War I that figure had approximately doubled; the figure was still around 10 million in 1929. The depression of the early 1930's cut down the number of employees by approximately one-fourth; the loss was not made up until 1937. There was an extraordinary rise in manufacturing employment during World War II. The total number, including those engaged in meeting military requirements, reached an all-time peak of close to 17 million at the end of 1943; nearly two-thirds were employed on war production. With the postwar period, a large number of those who had been engaged in manufacture of munitions were successfully absorbed in meeting wartime civilian demands. As of the end of 1948, the Department of Commerce estimated that the 319,000 manufacturing firms accounted for approximately 16.5 million employees.

³ The Department of Commerce estimates of the number of *firms* are not fully comparable to the Census figures on establishments. The operations of several establishments may be recorded under a single firm name. Working in the opposite direction is the fact that the Commerce estimates do not observe the minimum of \$5,000 of manufactured products annually and include some concerns which the Census would relegate to the category of service establishments. However, taking the comparable Commerce data on a firm basis, the estimates show an increase from 226,000 manufacturing firms in September, 1941, and 228,000 in December, 1943, to 319,000 firms engaged in manufacturing as of December, 1947.

SMALL PLANT MANAGEMENT

TABLE 1. MANUFACTURING POPULATION, 1849-1947 ^a

| Year | Number of establishments | Persons engaged | | |
|--|--------------------------|------------------------------|---------------------------------|---------------------------------|
| | | Proprietors and firm members | Salaried officers and employees | Wage earners (average for year) |
| Factories Excluding Hand and Neighborhood Industries | | | | |
| 1947 | 240,881 | 188,948 | 2,378,116 | 11,916,188 |
| 1939 | 184,230 | 123,655 | 1,048,607 | 7,836,567 |
| 1933 | 139,325 | 72,267 | 1,770,314 | 5,878,611 |
| 1929 | 206,663 | 132,686 | 1,290,037 | 8,369,705 |
| 1923 | 192,096 | 147,958 | 1,280,488 | 8,194,170 |
| 1919 | 210,268 | 249,881 | 1,371,888 | 8,423,964 |
| 1914 ^b | 173,588 | ^c | ^c | 6,475,567 |
| 1914 ^d | 268,450 | 258,565 | 911,853 | 6,603,063 |
| 1909 | 264,826 | 272,426 | 750,537 | 6,262,242 |
| 1904 | 213,444 | 225,115 | 493,297 | 5,181,660 |
| 1899 | 204,750 | ^e | 348,100 | 4,501,919 |
| Factories and Hand and Neighborhood Industries | | | | |
| 1899 | 512,191 | .... | .... | 5,306,143 |
| 1889 | 355,405 | .... | .... | 4,251,535 |
| 1879 | 253,852 | .... | .... | 2,732,595 |
| 1869 | 252,148 | .... | .... | 2,053,996 |
| 1859 | 140,433 | .... | .... | 1,311,246 |
| 1849 | 123,025 | .... | .... | 957,059 |

^a U.S. Bureau of the Census, *Historical Statistics of the United States 1789-1945*, p. 179. 1947 data from *Census of Manufactures, 1947*—Vol. I, p. 23.

^b Includes establishments having products valued at \$5,000 or more.

^c No data.

^d Includes establishments having products valued at \$500 or more.

^e No comparable data.

WHAT IS A SMALL PLANT?

Where does the small plant fit into this picture? Our most recent clear bench mark for a breakdown of manufacturing plants by size is the last prewar *Census of Manufactures*, as of the year 1939. If we consider that a plant with 500 or more persons belongs to the big-business class, then all but 2,400 manufacturing firms could be classified as small and medium-sized plants. As between the small and the medium-size plant, the line of

demarcation is largely one of personal judgment, often depending on how big one's competitors are. In the extreme case of the automotive industry, a firm like Packard or Studebaker, employing thousands of persons, is popularly regarded as one of the little fellows in that field when compared with the Big Three. On the other hand, a printing shop with more than 100 employees is commonly regarded as at least of medium size, perhaps a big business. Some authors (Willard Thorp⁴ and others) consider 250 wage earners as a better mark for drawing the dividing line between small and large organizations.

TABLE 2. SIZE DISTRIBUTION OF MANUFACTURING FIRMS AND EMPLOYMENT, 1947 *

| Size class | Number of firms | | Number of persons engaged | |
|---------------------------|-----------------|----------|---------------------------|----------|
| | In thousands | Per cent | In thousands | Per cent |
| 1-4 employees | 70.4 | 29.3 | 161.0 | 1.13 |
| 5-9 employees | 46.6 | 19.3 | 310.9 | 2.17 |
| 10-19 employees | 40.6 | 16.9 | 561.9 | 3.9 |
| 20-49 employees | 40.0 | 16.6 | 1,243.8 | 8.7 |
| 50-99 employees | 18.7 | 7.8 | 1,300.8 | 9.2 |
| 100-249 employees | 14.3 | 5.9 | 2,228.7 | 15.6 |
| 250-499 employees | 5.6 | 2.3 | 7,929.9 | 13.4 |
| 500 or more | 4.7 | 1.9 | 6,557.3 | 45.9 |
| Total manufacturing | 240.9 | 100.0 | 20,294.3 | 100.0 |

* U.S. Department of Commerce, *Census of Manufactures, 1947*, Vol. I, p. 97. For data covering 1948 see p. 249.

In a breakdown afforded by Table 2, if we take the Department of Commerce definition of a small plant as one with less than 100 employees, we find that 90 per cent of all the manufacturing firms in the country are in the small plant category. If 250 employees are chosen as criterion, the small plant group includes 95.8 per cent of all. Not included within this category are nearly 33,000 establishments consisting entirely of the proprietors or partners, with no hired employees. If they are considered as small plants, this entire group represents 98.2 per cent of all manufacturing plants. Printing and publishing contributed most to the total of about 70,000 firms with one to four employees. As size of plant increases, the total number of firms

⁴ Willard Thorp, *The Integration of Industrial Operation*. Census Monograph III, 1924, p. 75.

TABLE 3. DISTRIBUTION OF MANUFACTURERS BY SIZE AND INDUSTRIES, 1947 *

| Manufacturing lines | Total † all sizes | 0-99 em- ployees | 100-249 em- ployees | 250-499 em- ployees | 500 or more em- ployees |
|--|-------------------------|------------------------|---------------------------|---------------------------|----------------------------------|
| <i>A. Number of Firms, Thousands</i> | | | | | |
| Foods and kindred products..... | 39.9 | 37.1 | 2.0 | 0.5 | 0.3 |
| Tobacco manufactures | 1.1 | 0.9 | 0.09 | 0.06 | 0.05 |
| Textile-mill products | 8.2 | 5.7 | 1.2 | 0.7 | 0.6 |
| Apparel, etc. | 31.0 | 28.8 | 1.7 | 0.4 | 0.1 |
| Lumber and timber basic products. | 26.2 | 25.02 | 0.9 | 0.2 | 0.08 |
| Furniture and finished lumber.... | 7.7 | 6.93 | 0.5 | 0.2 | 0.07 |
| Paper and allied products | 4.1 | 2.9 | 0.7 | 0.3 | 0.2 |
| Printing, publishing, etc. | 29.0 | 27.9 | 0.7 | 0.2 | 0.2 |
| Chemicals and allied products | 10.1 | 9.1 | 0.6 | 0.2 | 0.2 |
| Products of petroleum and coal ... | 1.4 | 1.0 | 0.2 | 0.1 | 0.1 |
| Rubber products | 0.9 | 0.65 | 0.1 | 0.05 | 0.1 |
| Leather and leather products | 5.3 | 4.3 | 0.6 | 0.3 | 0.1 |
| Stone, clay, and glass products ... | 11.7 | 10.8 | 0.6 | 0.2 | 0.1 |
| Primary metal industries | 5.4 | 3.9 | 0.7 | 0.4 | 0.4 |
| Fabricated metal products | 16.7 | 14.8 | 1.1 | 0.4 | 0.4 |
| Machinery (except electrical) | 17.9 | 15.7 | 1.1 | 0.5 | 0.6 |
| Electrical machinery | 4.0 | 2.9 | 0.4 | 0.3 | 0.4 |
| Transportation equipment | 3.7 | 2.9 | 0.3 | 0.1 | 0.4 |
| Instruments and related products.. | 2.6 | 2.22 | 0.2 | 0.08 | 0.1 |
| Miscellaneous manufactures | 14.1 | 13.2 | 0.6 | 0.2 | 0.1 |
| Total manufacturing | 240.9 | 216.3 | 14.3 | 5.6 | 4.7 |
| Percentages | 100.0 | 89.7 | 5.9 | 2.4 | 2.0 |
| <i>B. Number of Employees, Thousands</i> | | | | | |
| Food and kindred products | 1,441.8 | 607.2 | 304.8 | 181.6 | 348.2 |
| Tobacco manufactures | 111.8 | 12.9 | 15.9 | 19.7 | 63.3 |
| Textile-mill products | 1,233.4 | 149.2 | 196.8 | 239.8 | 647.6 |
| Apparel, etc. | 1,081.8 | 564.1 | 252.9 | 143.5 | 121.3 |
| Lumber and timber basic products. | 635.7 | 365.5 | 141.5 | 67.3 | 61.4 |
| Furniture and finished lumber | 322.4 | 123.4 | 78.4 | 50.9 | 69.7 |
| Paper and allied products | 449.8 | 90.7 | 116.5 | 108.6 | 134.0 |
| Printing, publishing, etc. | 715.5 | 304.1 | 115.0 | 82.4 | 214.0 |
| Chemicals and allied products | 632.3 | 162.4 | 94.0 | 79.6 | 296.3 |
| Products of petroleum and coal ... | 212.0 | 23.1 | 24.0 | 36.2 | 128.7 |
| Rubber products | 259.1 | 14.2 | 16.0 | 18.3 | 210.6 |
| Leather and leather products | 383.2 | 90.7 | 86.3 | 104.3 | 101.9 |
| Stone, clay, and glass products ... | 462.1 | 133.5 | 87.7 | 80.3 | 160.6 |
| Primary metal industries | 1,157.1 | 93.4 | 110.8 | 134.0 | 818.9 |
| Fabricated metal products | 971.5 | 257.3 | 173.6 | 153.2 | 387.4 |
| Machinery (except electrical) | 1,545.3 | 256.2 | 181.0 | 189.5 | 918.6 |
| Electrical machinery | 801.4 | 65.8 | 68.9 | 97.2 | 569.5 |
| Transportation equipment | 1,181.7 | 52.5 | 50.5 | 51.6 | 1,027.1 |
| Instruments and related products.. | 232.0 | 35.7 | 27.5 | 26.1 | 142.7 |
| Miscellaneous manufactures | 464.4 | 186.1 | 86.6 | 65.8 | 125.9 |
| Total manufacturing | 14,294.3 | 3,578.5 | 2,228.7 | 7,929.9 | 5,557.2 |
| Percentages | 100.0 | 25.0 | 15.6 | 13.5 | 45.9 |

becomes more widely distributed over the whole range of manufactured products, with textiles and apparel along with the durable lines assuming increasing importance in the intermediate-size classification.

Manufacturing may be distinguished from the distribution and the service industries by its greater concentration of employment in large establishments. Thus, while the firms with 500 or more employees constitute only a very small percentage of the number of firms, in 1947 they accounted for almost half of manufacturing employment. During the prewar decade small firms accounted for one-fifth to one-fourth of total manufacturing employment, with 2.5 million persons directly earning their livelihood therefrom. Approximately an equal number was included within the intermediate-size class of 100 to 499 employees, and in terms of the problems that confront small businesses in general, many of those firms of intermediate size have much in common with the small manufacturing plant.

In 1948 there were at least 280,000 or possibly more than 300,000 small plants in the United States, depending on the definition used.

As would be expected, the relative importance of the small-business sector varies greatly from industry to industry. At one extreme may be mentioned the manufacture of cigarettes, wherein the eight largest companies employ 99.4 per cent of all wage earners in that industry. In electrical machinery, also, as well as in the automotive area, a few large companies account for most of the employment. At the other end of the scale, however, we have the example of printing and publishing, wherein 40 per cent of total employment is in firms of less than 100 employees. In women's apparel the majority of the workers are in shops of less than 100 employees (see Table 3).

Some passing mention needs to be made also of the crucial position which a small-scale industry may occupy in particular communities. The familiar example is that of the textile mills and related fabricating plants of New England. Predominantly small business, they nevertheless are a key to industrial prosperity or hard times in the New England area as a whole. New York City itself, although the seat of big-business authority and financing, is industrially the home of small-scale manufactures, with printing and apparel lines at the head of the list. The purchasing power of such areas in turn makes the difference between high and unsatisfactory employment levels in many centers of big-scale production which depend substantially upon the important consumer wants of the New England and New York markets.

* SOURCE: U.S. Department of Commerce, *Census of Manufactures, 1947*, Vol. I, pp. 97, 98.

† Owing to rounding, figures do not equal the sum of components.

ECONOMIC IMPORTANCE OF SMALL PLANTS

No branch of America's economic life contributes as heavily to the total national income as does manufacturing. The growth in its relative importance has been a striking phenomenon over the past century. The *Census of Manufactures* of 1849 estimated the total income originating in manufactures in that year at less than \$300 million. Fifty years later the corresponding figure passed the \$5 billion mark. For the postwar year of 1948, the income produced through manufacturing was given by the U. S. Department of Commerce as \$68 billion, or one-third of the \$205 billion realized from all private enterprise in the United States.

TABLE 4. MANUFACTURING ESTABLISHMENTS
CLASSIFIED BY VALUE OF PRODUCTS, 1939 *

| Value of output | Establishments | | Total value of products | |
|-------------------------|----------------|----------|-------------------------|----------|
| In thousands of dollars | Number | Per cent | In millions of dollars | Per cent |
| 5-20 | 60,593 | 32.9 | 681 | 1.2 |
| 20-50 | 42,083 | 22.9 | 1,354 | 2.4 |
| 50-100 | 25,490 | 13.8 | 1,811 | 3.2 |
| 100-250 | 24,718 | 13.4 | 3,921 | 6.9 |
| 250-500 | 13,066 | 7.1 | 4,627 | 8.1 |
| 500-1,000 | 8,706 | 4.7 | 6,111 | 10.8 |
| 1,000-2,500 | 6,088 | 3.3 | 9,298 | 16.3 |
| 2,500-5,000 | 2,013 | 1.1 | 6,919 | 12.2 |
| 5,000 and over | 1,473 | 0.8 | 22,121 | 38.9 |
| Total | 184,230 | 100.0 | 56,843 | 100.0 |

* Bureau of the Census, *Census of Manufactures*. Computations by National Industrial Conference Board, *Economic Almanac* 1949, p. 190. No corresponding data are available for 1947.

The firms doing a business of a million dollars or over accounted for the major portion of the total dollar value made by manufacture (see Table 4). A very significant third of the total manufactured product is turned out by firms with annual sales of less than a million dollars. It covers the basic areas of food, apparel, and housing, and it also represents those areas of custom-made and precision goods which lift an economy to higher cultural levels.

The value of the output of American manufactures has increased more than 70-fold over the last century, with comparatively little increase in man-hours. The number of employees in manufacturing has increased by less than the increase of the business population as a whole. When the decline

in the standard work week from 66 to 40 hours per week or less is taken into account, the aggregate amount of labor effort is accordingly reduced. The small plant has had to find its strategic niche in an economy which is associated with a phenomenal rise in the use of mechanical energy, reflected in the enhanced productivity of the American worker. In terms of the rated capacity of horsepower equipment, American manufactures used less than 10 million units in 1899. The rated horsepower rose to a figure above 50 million by 1939, and nearly three-fifths of this amount was obtained by industry through energy purchased from power plants as distinguished from the prime movers of power generated by mechanical equipment within the manufacturing plant itself. Naturally this type of development and growth has gravitated toward the large plant engaged in mass production. One test of the stamina of the small American plant is its ability, on its own scale, to keep up with technological advances in the use of mechanical aids to the workers. Many thousands of small plants bear testimony to the ingenuity of American engineering in the design and use of highly adaptable small plant machinery. The improvements in that sector have been no less impressive than those which have been devoted to increased size and power of large-scale plant equipment.

A FEW GRIM FACTS TO BE FACED

Reference has already been made to the demonstration of its strategic importance in our economy which the small plant gave in World War II. Sharing in the war effort, the small and medium manufacturing firms generally made substantial gains in physical capacity and financial strength. It is notable that during the years 1944-1946, small plants recorded the lowest percentage of failures in several decades. Whether the small plant can retain the improved position in which it emerged from the war is a highly debatable question.

In this respect a few grim facts have to be faced. In the first place, the manufacturing area of our business organization has grown in size during the past 10 years at a more rapid rate than has the business population as a whole. Between 1939 and 1949 there was an increase of nearly 70 per cent in the number of manufacturing firms as against a 20 per cent increase for the business population as a whole. Every period of rapid increase in the number of new businesses has heretofore been followed by a large number of discontinuances. Taking business population as a whole, only about half of those who start an enterprise in a given year are still in it at the end of 3 years. Many succeed in starting some other business, but only about one-seventh of the number of entries will be found still in business 10 years after they have started.

Studies recently made by the Business Structure Division in the Department of Commerce bear out the point that manufacturing is the most sensitive of the various branches of industries. On a percentage basis, the number of manufacturing concerns increases or declines, with changes in business conditions, about three times as fast as do business concerns in general. An "index of sensitivity" for the major industry groups has given the following result: For every 10 per cent change in the total business population, the change in the business population is

| | <i>Per Cent</i> |
|--|-----------------|
| Manufacturing | 31 |
| Contract construction | 19 |
| Wholesale trade | 10 |
| Retail trade | 8 |
| Finance insurance and real estate..... | 8 |
| Service industries | 4 |

This comparison holds for the *net change*, despite the fact that retail and service stores, of which there are more than 2.5 million, are observed to change hands in the greatest numbers. Obviously, the discontinuances are not among the giant corporations in manufacturing, but among the larger population of small enterprises. The reasons given for the greater sensitivity in the manufacturing area, as compared with the others, are primarily two: (1) There is a generally wider fluctuation in demand for the product of a small manufacturer than for goods and services in other sectors of the economy. The line of the average small manufacturer is much less diversified than that of the large manufacturer or than that of the average retailer. He is more prone to rise or fall with any significant change in demand for his specialty. (2) Many a small manufacturer is supplementing the output of his larger competitors or may be devoting much of his output to the supplying of a few large customers. In such cases the small manufacturer is likely to be the victim when business is not sufficiently large to support the output of both the large and the small producers.

Here, again, the degree of sensitivity varies with the different lines of manufactures. Thus, the sensitivity index referred to above shows the highest figure for lumber and lumber products, with an index of 57, reflecting the sensitivity of the construction industry generally to changes in the business cycle. Near the other end of the scale is paper and allied products, with an index figure of 13—an industry in which there are fewer very small manufacturing firms and in which the demand does not rise and fall with anything like the sharpness characteristic of construction.

Any general analysis of the present availability of money and credit, of the level of consumer demand, and of the prospects for technological ad-

vancement tends to indicate that there is ample support for a continuance of our economic growth far into the visible future. By the same token, however, we are likely to see during the next few years a *drastic shaking down of the less efficient operators* as we proceed with the shift from the seller's market of the war and early postwar period to the buyer's market, upon which postwar business will have to be stabilized. In that picture, the managerial capacity of the small plant is likely to receive a test as severe as any that it has had. Case studies of recent failures in small business support the view that the quality of management is more of a determining factor than even the availability of financing in deciding which firms will grow and which will fall by the wayside.

There is every indication that the small plant will continue to be significant in the total picture. That significance will not be measurable by a mere comparison of the dollar figures. A strategic ingredient may account for only a small fraction of the total weight of the composite, yet its absence can well mean the inability to turn out the larger product. This applies to the variety of skills and custom-made lines through which the small plants contribute to fill the gaps in the total industrial picture. It is also reflected in the large number of outlets through which the large manufacturer may distribute his unfinished or semiprocessed materials for that final custom-type fabrication to which the small plant is so often best adapted. The small plant has the great advantage of flexibility. It can make decisions quickly without the red tape of reconciling conflicting opinions of officers and stockholders. It is less subject to a rigid backlog of fixed costs, large inventories that must be built up in advance, and long-standing arrangements that enter into the carrying on of a giant enterprise. These fundamental advantages of the small plant help to make it the indispensable leaven of fresh ideas and free enterprise that go to make a vital and healthy economy.

CHAPTER 2

SMALL PLANT FINANCING AND BANKING

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There are at this time (1949) in this country approximately 4 million business enterprises, the largest number in the history of our nation. About 320,000 of these are engaged in manufacturing. The small plant, however, is the more numerous, and production from this classification is very important.

While in the earliest stages of creating the small plant no outside financing may be required, sooner or later banking services and possibly also loans or credits are needed. In their totality the services rendered to small plants and small commercial enterprises by the banks and financial institutions of this country represent a considerable portion of all financial transactions. Besides, they are of greatest importance from the economic and above all from the management point of view.

THE NET WORTH OF BUSINESS AND MANUFACTURING ENTERPRISES²

Bankers are familiar with the various definitions setting forth which plants should be considered as small plants. Yet there is one which most bankers might prefer. It uses *net worth* as the criterion for determining size.

About 99 per cent of both the total business establishments and the total manufacturing concerns in the United States can be classified as small.

The percentage distribution by tangible net worth of active commercial and industrial firms listed by Dun and Bradstreet in 1944 is shown in Table 1.

Table 1 clearly reveals the relative small net worth of the great majority of business concerns in the United States.

¹ The author is also chairman of the Small Business Credit Commission of the American Bankers Association.

² Net worth is the total value of the capital stock and surplus combined. It is the stockholder's or owner's stake in the business. The same net worth is obtained if all reserves and all liabilities are deducted from all assets.

TABLE 1

| <i>Tangible Net Worth</i> | <i>Percentage Distribution of Number of Firms</i> |
|---------------------------|---|
| Below \$1,000 | 41.5 |
| \$1,000-3,000 | 20.7 |
| \$3,000-5,000 | 11.1 |
| \$5,000-10,000 | 10.2 |
| \$10,000-20,000 | 6.8 |
| \$20,000-50,000 | 5.3 |
| \$50,000-200,000 | 3.1 |
| Total | 98.7 |
| \$200,000-\$500,000 | 0.6 |
| \$500,000-1,000,000 | 0.3 |
| Above \$1,000,000 | 0.4 |

For the purpose of this chapter, however, the meaning given small business by the U. S. Department of Commerce is used. It defines the field of small business to include any manufacturing plant which employs 100 persons or less, wholesale organizations with annual net sales of less than \$200,000, and retail stores, service establishments, hotels, places of amusement, and construction concerns with sales or receipts of less than \$50,000.

COMMERCIAL BANKS AS A SOURCE OF FUNDS

The importance of commercial banks as a source of funds for small business cannot be emphasized too strongly. By far the largest number of bank loans are made to small business. The Federal Reserve banks made a survey of business loans of member banks as of Nov. 20, 1946, at which time it was estimated that there were 662,000 such loans outstanding. Loans to borrowers having total assets under \$50,000 constituted 433,000 of the total, and loans to those with assets of \$50,000 to \$250,000 accounted for an additional 162,000. Together, these groups made up 90 per cent of the number of loans. In the manufacturing and mining classification, there were 115,000 loans outstanding. A breakdown by size of business, again emphasizing the importance of small business contacts with banks, was as follows:

| Size of borrower (total assets) | Number of loans | Per cent of total |
|---------------------------------|-----------------|-------------------|
| Under \$50,000 | 52,000 | 45.2 |
| \$50,000-250,000 | 37,000 | 32.2 |
| \$250,000-750,000 | 12,000 | 10.5 |
| \$750,000-5,000,000 | 9,000 | 7.8 |
| \$5,000,000 and over | 5,000 | 4.3 |
| Total | 115,000 | 100.0 |

THE PAST AND FUTURE
FINANCIAL SITUATION OF SMALL PLANTS

During the period between 1941 and 1948, a wartime condition existed in the United States in which these small plants could operate and grow. This was due to the fact that they could sell their maximum production without much effort and at a profit, which in many cases was considerably in excess of the ordinary normal margin. Their entire machine capacity was productively absorbed, and despite increased break-even points and larger taxes, the war-stimulated demand for goods made manufacturing conditions extremely favorable so that small plants thrived. Now there are many signs that production has caught up with demand. This will result in surpluses of goods in many lines, and *many small plants will have to reorient their operations on a more normal competitive basis*. Inefficient and high-cost producers will have difficulty in surviving.

During the period we are presently entering, small-business enterprises must demonstrate the need for their old or changed product and seek buyers in the market place. No doubt, the return of more competitive conditions will result in some shrinkage of gross margins of profit. Because of high break-even points, many small plants will be extremely susceptible to such conditions. It will be very difficult for them to cut costs based on direct labor charges and many other items of expense that seemingly are fairly well fixed. Failing to effect substantial economies will reduce or eliminate anticipated profits.

The reasons for business failures since 1941 have been somewhat different in the order of importance from during normal prewar years. During and since World War II, manufacturing businesses failed for the following reasons, listed according to importance:

1. Scarcity and difficulty of obtaining materials
2. Shortage of adequate labor
3. Increased labor costs
4. Lack of goods to supply customers
5. Lack of capital
6. Increased rentals
7. Shortage of equipment and repair parts
8. Lack of a dealer organization
9. Other causes.

THE NEED FOR BETTER MANAGEMENT AND FINANCIAL PLANNING

In normal times, there are other factors which cause business failures, the most prominent of which is *incompetence in management*. This includes *failure on the part of management to understand that a business must be planned from many aspects even before it is started*. Planning must cover not only the financing of the business but also the consideration of such factors as will affect its successful operation, including business conditions, market survey, budget projection, and technical study of the product for performance and quality as well as customer acceptance. In addition, the management should become familiar with Federal, state, and city laws and regulations applicable to the business and many other factors which have developed as a result of government interest in the social as well as the economic aspects of business.

There seems to be no question but that *business failures will increase* now that we have entered once more into a competitive era. It now becomes a problem of finding proper markets for products at prices that will be profitable. Businessmen in many cases have been complaining since the war about labor inefficiency and low man-hour output. If we are honest as managers, we shall have to admit that businessmen also have been influenced by the ease with which they could operate successfully. The art of salesmanship has been largely lost, and inefficiency exists in distribution. Business management as well as labor again must become adjusted to meeting competition in a market where the supply is greater than the effective demand. It will be the most resourceful, competent people who will survive. In this, both management and labor have a responsibility.

The very basis for any successful manufacturing concern is planning. It is the ingredient of every activity of management, whether it be financing, production, employee relations, customer relations, or merchandising of the product. Financial planning is a continuous process which carries through every phase of manufacturing activity. Before the organization of any manufacturing concern, a great deal of preliminary planning should be done.

WHAT TO CONSIDER IN FINANCIAL PLANNING

The actual financing of a manufacturing enterprise should be arranged only after it has been determined that there is an economic need for the product or the services and that the plant can be operated on a profitable basis. This encompasses the need for studying the market for the product, the costs of production, and, finally, the price people will pay for it. The investigation might reveal that the article to be manufactured is excellent

and that an active demand for it exists. The final decision, however, must rest on whether or not the public will pay a price sufficient to recover costs of production and yield a reasonable profit. It is in this financial planning that banking plays a part.

Just to present a typical situation: A manufacturer possessing the basic requirements for expanding his business—namely, capital, character, common sense, and capacity—proposed to develop a new product. In the development of this new product, which was to be added to his present line, the requirements of sound engineering and development work were met and a patent obtained. He then began to figure costs. Following the standard procedure of cost accounting, he arrived at a cost per unit of \$1.18 for the product packaged and ready for shipment. This cost included all expenses for manufacturing, distributing, and selling but allowed no margin for profit. He planned to sell the product to jobbers, through a manufacturers' agent with extensive facilities for distribution, at \$2.95 per unit. He planned to allow jobbers a discount of 60 per cent. His sales estimates indicated a maximum output of 5,000 units per day, and a study of customer acceptance showed that the article would be in demand. When this manufacturer, however, talked of a price of \$2.95 a unit, he found that most potential customers would not pay more than \$1.98. Therefore, it was not wise for him to proceed with his plans. The manufacturer actually proved to himself that the article could not be produced and sold on a profitable basis.

In some cases, manufacturers have become so enthusiastic about their plans that despite preliminary unfavorable estimates they have proceeded nevertheless with production. Their enthusiasm for the product has caused them to discount or place too small emphasis on risks involved. Careful planning in advance, as was pursued by the manufacturer mentioned, will cut down the number of business failures. It will aid small plants to avoid unsatisfactory operations and assist the banks in analyzing customer prospects if they are called upon to supply financial services.

SOME PRACTICAL ASPECTS OF OBTAINING CAPITAL

One of the greatest difficulties that manufacturers in the United States face under current conditions is the procuring of equity capital for a new business concern. *Equity capital is ownership capital that is permanently needed in a business.* The amount and proportion of the firm's resources which take the form of equity capital obviously depend on the nature of the operation. This capital is acquired from many sources: the entrepreneur, relatives and close friends, business concerns, local and nearby capitalists,

and the security markets. Experience has taught that, before any business is launched, it is imperative to have the capital finances well planned in advance. Arrangements should be made for all types of capital, including equity capital, bank loans, and suppliers' credit. A man gets an idea. If he is enthusiastic about it himself, it often is easy to arouse the interest of others and so attract capital. At this time of enthusiasm, it is most important that adequate equity capital be raised. Enthusiasm for a new and untried venture is great. If he has some money of his own, he can perhaps interest relatives, friends, and other people to join with him in the undertaking.

It is difficult to obtain additional equity capital if the original funds are depleted before the business is established on a profitable basis. This is particularly so if the product has not met with sufficient public acceptance. At this stage most new businesses fail because of their inability to obtain additional equity capital. After the business has succeeded, even though in a small way, additional equity capital can be attracted more easily.

If a newly launched concern can show that it can be operated on a profitable basis and its prospects still appear to be good, then it is much easier to induce investors to subscribe for additional equity capital. For that reason careful records should be maintained to prove the progress actually made.

In planning a business that entails any development or research work, whether it is of the product itself or the market, it is easy to underestimate the amount of money needed and to miscalculate the amount of time required to reach a successful point of operation. So many times a venture is started with great enthusiasm, with the organizers not frankly facing cold facts. Whenever any project is undertaken that requires research or education of people, time usually is found to be a very elusive thing. The allotted time passes before the expected results have been achieved. It would be best for a person starting a new enterprise or developing a new product to begin it as a part-time venture, earning his bread and butter as he goes along, or to see that an adequate amount of equity capital is raised before the initial step. Quite a few small concerns fail even though an excellent product is developed, purely for the reason that the amount of money or time needed to prove that the business could be operated profitably was underestimated. One of the most tragic things in the development of a manufacturing business is to see it run out of funds when it is on the verge of proving its product or when it has proved its product and has not had the opportunity of realizing a profit.

Capital is very fickle. It can be attracted by enthusiasm or ideas. It can be scared away by the very thought of failure. Again, it can be attracted by a showing of profits. Today, present conditions make it difficult to start a business from scratch and build it up through retention of earnings or

through the use of other people's capital. It must be remembered that, out of every dollar of profits, a substantial part must be paid out in income taxes.

Many people who have accumulated savings have been reluctant to invest in business ventures because the risks assumed were not proportionately compensated. After an incorporated business venture pays income and other taxes, the remainder of any profits if distributed as dividends would again be subject to income taxes to be paid by the investor. This is sometimes referred to as double taxation. A revision of our present tax structure would materially benefit small business.

This does not mean that the opportunity does not exist for building up successful businesses, but it does mean that *management must be better prepared and more competent*. More thorough planning is imperative before an enterprise is launched today.

HELP AVAILABLE TO THE SMALL PLANT

It should not be overlooked that there are many sources of help now available for the smaller businessmen who will use them.

The Small Plant Committee of the American Society of Mechanical Engineers, in preparing its study on *Small Plant Management*, has compiled information which covers in a practical way all the aspects of small plant management.

The U.S. Department of Commerce, through counsel and many publications, can be most helpful to the small business concern in furnishing information relating to specific businesses and how to set up financial records, such as operating statements and balance sheets.

Before starting or expanding any business, it would be advisable to read the booklets which would be applicable. A complete list can be obtained from the U.S. Department of Commerce of the available pamphlets, sheets, and booklets. The cost ranges from "no charge" to 25 cents each.

The Small Business Credit Commission of the American Bankers Association has worked very closely with the *Small Business Division of the Department of Commerce* in connection with the distribution of *Small Business Aids*. Plans now are being formulated for increasing this activity.

The interest in these *Small Business Aids* has been very active. As of Dec. 15, 1948, 882,129 copies were sold of the 43 titles in the Establishing and Operating Series. This figure is now in excess of 1 million. Sales of the following pamphlets amounted to over 104,000 copies—"Establishing and Operating Your Own Business"; over 57,000 copies of "Opportunities in Selling"; and approximately 25,000 copies of "Establishing and Operating a Bookkeeping Service." Other titles which were popular were "Grocery

Store," "Service Station," "Auto Repair Shop," "Real Estate," "Electrical Appliances," and "Mail Order."

The Bulletin Series also proved effective. Originally 3,300 copies of each bulletin were processed. There are at this time approximately 490 different issues. These bulletins, however, were reprinted by various organizations, and the total number runs into the millions. It is estimated that approximately 180,000 copies or reprints are distributed each month.

The National Association of Manufacturers has published some worthwhile booklets on business. *The Metropolitan Life Insurance Company* has several booklets, one of which is entitled *The Budget as an Aid to Management*.

The Ohio State University has recently issued a pamphlet listing a number of business aids published by different sources. There is today much more material available to help the small businessman than ever before. Unfortunately, it is not used so widely as it should be. It is a good deal like the story of the farmer who was asked whether he was going to take a short course in agriculture during the winter. He replied that he was not going to do so, as he was not farming half as well as he knew how to already.

There have been attempts in this country to have organizations within a community provide counsel and equity capital for new or existing concerns. The Industrial Corporation of Baltimore is one of the early ones and has been quite successful. The laws governing insurance companies also have been broadened so that a percentage of their funds can be invested in what amounts to an equity position.

HELP THAT BANKS AND BANKERS CAN GIVE

Business and banking can be a happy combination. When a man first begins to think about starting or expanding a business or a plant and has his facts in order, it is well for him to make a good banking connection. Fortunately, there are 15,000 banks in the United States, and banking is a very competitive industry. If a businessman does not strike the right chord when he talks to one banker, there are always other doors open. He should be as careful in choosing a bank as he is in selecting a wife, and he should consider the connection one to endure for a long time. If he takes his story to the bank, he will receive helpful suggestions.

The banker will be able to help him analyze and interpret general economic conditions and their possible effect on his particular situation. He should not look to the banker for inspiration, because that is something he must supply. A banker must be realistic, and this note of realism may be a source of strength to the businessman in restraining him from becoming too enthusiastic. He should have his story in tellable form, either by words or by

figures. The banker and the businessman should then be able to figure out what are the financial needs of the situation and the best methods of financing.

Bank credit is very flexible and can be cut and fitted to suit many needs. A plant might need only *temporary working capital*. It might, for example, need funds to meet weekly or monthly payrolls or to pay other current operating expenses. It might desire *funds to take advantage of cash or trade discounts* allowed by suppliers of goods. It might under favorable circumstances require *additional working capital* to carry a larger volume of accounts receivable or inventory. A business concern through the use of borrowed funds might be able to *reduce appreciably the cost* of certain materials or parts if purchased and stored in larger quantities. Bank loans would likewise be justified for the *acquisition* of new and more modern types of machinery and equipment which would result in substantial savings or increased earnings. Bank loans are often made for the *modernization of plants and equipment*. *Bank loans for longer periods of time* would be warranted in certain cases for the purchase of real estate, for plant expansion, or for long-term working-capital use.

The small businessman should choose a banker who has vision and good judgment, who is realistic and also receptive to a constructive program for the advancement of small business. Recognizing that there are differences in bankers as there are in businessmen, the one should be selected that suits the particular needs.

Generally speaking, bank credit follows capacity to operate a successful business. Experience shows that it has been very important to have the professional advice of a good banker, a good lawyer, and a good public accountant. It might seem an unnecessary extravagance, but many times to be without such advice has proved to be a high-priced luxury. If a concern is started with proper records and they are continued, an accurate moving picture is created of the operations that will be very helpful when negotiating for a line of credit.

The banker relies a great deal upon his appraisal of the *character and the know-how of the individual* running a concern in determining if credit should be extended. The banker also relies upon financial statements.

One of the greatest difficulties in the banking business is to obtain adequate figures from small business concerns. It is not easy to piece together the financial picture of a concern when vital information is missing from the application for a loan. A banker needs tangible evidence of the results of operations. No businessman should feel that he is being imposed upon if he is asked for complete figures about his business. It should be remembered that the banker is investing other people's money and essentially is becoming

TABLE 2. PERCENTAGE DISTRIBUTION OF TOTAL AMOUNT OF SECURED AND UNSECURED LOANS BY FEDERAL RESERVE MEMBER BANKS TO SMALL MANUFACTURING AND MINING BUSINESSES, NOV. 20, 1946 *

| Type of manufacturing business | Percentage of total | | Percentage of total secured by | | | | | | | | | |
|--|---------------------|---------|--------------------------------|--------------|------------|-----------------------------|------------------|----------------------|-----------------|-------------------------|--|----------------|
| | Unsecured | Secured | En-dorsed or comaker | Inven-tories | Equip-ment | Plant and other real estate | Stocks and bonds | Accounts receiv-able | Life insur-ance | Assign-ment of claims † | Govern-ment participa-tion or guar-antee | Other security |
| Manufacturing and mining, total | 39.6 | 60.4 | 18.3 | 10.0 | 22.0 | 15.2 | 12.6 | 7.6 | 3.9 | 7.7 | 1.3 | 1.3 |
| Food, liquor, and tobacco ... | 37.1 | 62.9 | 12.3 | 32.7 | 16.4 | 19.0 | 11.7 | 1.7 | 2.6 | 1.9 | 0.7 | 1.1 |
| Textiles, apparel, and leather | 47.3 | 52.7 | 36.9 | 4.6 | 7.0 | 9.6 | 21.7 | 10.2 | 5.5 | 3.7 | 0.3 | 0.7 |
| Metals and metal products... | 39.7 | 60.3 | 14.1 | 9.4 | 21.5 | 16.7 | 11.9 | 12.9 | 3.7 | 5.8 | 2.1 | 1.9 |
| Petroleum, coal, chemicals, and rubber | 32.4 | 67.6 | 16.4 | 2.3 | 18.2 | 12.9 | 10.9 | 3.4 | 4.1 | 29.6 | 0.7 | 1.4 |
| All other | 39.8 | 60.2 | 18.1 | 5.9 | 30.6 | 15.3 | 11.1 | 7.0 | 4.1 | 5.3 | 1.5 | 1.1 |

* In a substantial number of cases bank loans to small business do not require security. Whether a loan is secured or not depends upon many factors, including the type of business and credit standing of the concern. The Federal Reserve survey of loans to small business (defined in the survey as those having assets under \$750,000) engaged in manufacturing and mining showed wide variations in the proportion of loans secured and the type of security taken in different lines of operation. Results are summarized in the table above.

† Includes oil runs.

a partner. No individual would be likely to do this unless he were satisfied with the facts presented.

A businessman should not resent it if a banker asks searching questions about his business. A banker sometimes can be more liberal and constructive in granting credit when he has complete information. One fact usually forgotten is that the larger a business grows, the more money it takes to operate. Even if the businessman possesses adequate physical facilities, a larger volume of production or sales means more inventory, more accounts receivable, more labor to be paid each week. This requires additional working capital and necessitates the retention of a larger share of earnings in a growing business.

Too often, an enterprise will get a good start in a small way, and the owner will think he has hit the top with all of his problems solved. He then begins to lead a country-club life and quickly becomes an executive. He forgets that the larger the business, the greater his responsibility and the need for more capital. Income taxes take a large enough toll out of a business without the owner's unnecessarily adding to the burden by either salary or expense accounts too large for the size of the business. Such an attitude on the part of the owner affects his bank credit.

Banks will often require the personal endorsement of the man who owns all or most of the stock of an incorporated small business. It should be his primary risk, as he is the one who will benefit principally if the venture is successful. In struggling to succeed, *some businessmen will attempt to expand too quickly*. They will not allow the business to grow naturally, but they attempt to force its expansion, risking the impairment of working capital and sometimes threatening its very existence. It is much safer and in the end more profitable to build a business slowly and soundly.

Many concerns would have been better off had they grown solidly and consistently over a period of time. One of the great problems of today is that business concerns have had it too easy for about 10 years, owing to rising level of prices and a tremendous demand for goods. As a result, there has been too little actual supervision. A profit-and-loss system is extremely desirable, for individual initiative is rewarded by profits. A system of private enterprise is not a one-way street. The fit survive, the semifit exist, and the unfit go out of business. The history of business failures in this country shows how active is the force of elimination.

A banker in considering an application for a loan will be interested, among other things, in the following facts:

1. The character and integrity of the management
2. The ability, or know-how, of the management
3. The quality, public acceptance, and demand for the goods produced

4. The competition in the same industry and the competition from substitute goods
5. The financial condition of the company as revealed by the latest balance sheet
6. The success of the company as disclosed by the profit-and-loss statements
7. The future prospects of the company indicated by budgets and supplemental data
8. General economic conditions and other factors which have a bearing on the continued success of the company
9. The specific use to which the loan proceeds are to be put
10. The source of funds from which the loan is to be repaid and the dependability of said source
11. Whether the diverting of funds to meet the proposed repayment schedule will interfere with the normal operations of the business.

FINANCING THE VETERAN'S SMALL ENTERPRISE

Since the cessation of hostilities of World War II, many veterans have returned to civilian life intent on establishing themselves in business. The government through the Soldiers' Readjustment Act of 1944, as amended, provides for guaranteeing loans made to eligible veterans engaging in business or pursuing a gainful occupation.

The banks of this country took very seriously the matter of aiding veterans. On Feb. 25, 1949, the figures released by the Veterans Administration showed that approximately 1 out of 150 eligible veterans had borrowed for business purposes under this act. The aggregate of these loans was \$329,873,000, averaging about \$3,171 per loan. Banks made countless other loans to veterans without the benefits of this law. The record up to this time has been fairly satisfactory.

The banks spent a great deal of time in helping veterans analyze the possibilities of a business venture and in many cases judiciously kept them out of trouble. The banks as a whole are very willing to grant credit to a veteran under the provisions of the law without the benefits of the Act, if there is a reasonable chance that he can make good.

CONCLUSION

The small plant, like the bank, has certain *responsibilities to the community* in which it is situated. Directly and indirectly, the local people and merchants are affected by its progress. The small plant must build its opera-

tions upon a firm foundation, transact its business on a progressive but not a speculative basis, maintain harmonious relations with its employees, create better working conditions for its personnel, and take a constructive interest in civic improvements. Its relation with local investors and suppliers of goods should be on a satisfactory basis.

The small plant should consult with and keep the local bank informed of its plans and progress. The bank in discharging its important role in the affairs of the community serves not only as a supplier of credit but also as an invaluable source of business information. Banks during recent years have reiterated time and again their potential usefulness to industry and the economy. They have adopted the objective that bank credit shall be made available to every individual, firm, or corporation needing it for a constructive purpose. They have distributed information on various business subjects and have held practical conferences on subjects of vital interest to the businessmen in the community.

While the profit motive causes a businessman to push ahead, nevertheless he must not overlook his relationships with the townspeople and the welfare of the community. They, too, have a stake in his success or failure. As the small plant succeeds, so will the local community prosper. As communities thrive, so will the nation.

The economy of our nation is dependent, therefore, on the welfare and prosperity of its various communities. A closer cooperative relationship should therefore exist among businessmen, labor, and banks.

CHAPTER 3

COMMUNITY PROGRESS CREATED BY SMALL PLANTS

BY

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In what ways do small industrial plants contribute to the progress of American community life? What is the role of small plant management in stimulating and developing community progress?

It is not necessary here to belabor definitions. But some explanation and definition seem essential.

In the first place, we are limiting our examination of "small plants" to manufacturers and to a few public utilities. Some of them started small and have grown to industries of national importance. Some have had continuous and uninterrupted progress, others have had to change completely, and some have undergone several reorganizations. As far as possible the materials have been selected as illustrative of small plant influence in our economy.

WHAT IS A COMMUNITY?

In the United States—as in the rest of the world—the *community is the basic unit of social and economic life*. No two communities are quite the same—like people, they have individual differences and "peculiarities." Also like people, they are enough alike to want what the others have and to compete for advantages in the race for progress. In a very real sense they are units of our state and national life. They may not be the units that make the laws, but they are the units that interpret the laws and enforce them accordingly.

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Sociologists define the community as a fairly definite population area which bounds the goings and comings and sets the pattern of life for most individuals, families, and social and economic groups. It is the unit of social participation in which the needs, wants, and requirements of modern living are satisfied.^{1a}

COMMUNITY PROGRESS AND REGRESS

As we have just seen, the community is a composite of all the various services and relationships that satisfy the requirements of modern living. Table 1 gives the United States Census classification of these economic and social requirements by listing the number of operating firms scattered over the United States. This list excludes agriculture and government but otherwise suggests the factors that go to make the balanced community and to a very large extent classifies the occupational groups of people who cooperate in the community life. Behind these captions, however, is a vast variety of activities. For example, the *service industries* include hospital and health, schools, libraries, churches, newspapers, law enforcement, personal services, hotels, restaurants, recreation, etc.; *retail trade* includes the vast variety of stores, ranging all the way from the large department stores to the wayside farm-implement dealers; *manufacture* includes even a greater variety, producing durable and semidurable goods and the many commodities demanded by the American public.

As science and technology progress, there is an almost immediate demand that the benefits of their progress be made available as speedily as possible to the American public. It is obvious, therefore, that a successful community must provide its population with a balance of what is wanted and needed and with a continuous advancement and improvement along every line in both product and service. Communities that fail to deliver satisfactorily in any one or a number of these aspects soon find themselves slipping. If, for example, the local merchants do not maintain a merchandising service that is adequate, up-to-date, and pleasing, the customers will go elsewhere; if the transportation facilities are poor and the highways inadequate, the community suffers; if manufacturing does not supply jobs and the opportunities for a large part of the population, the workers will

^{1a} For detailed definitions and descriptions of the community see one of the following standard texts on sociology: Charles Horton Cooley, R. C. Angel, and L. J. Carr, *Introduction to Sociology*. New York, Charles Scribner's Sons, 1933, Chap. XVI, "The Community and Its Structure." L. D. Osborn and M. H. Neumeyer, *The Community and Society*. New York, American Book Company, 1933, p. 8. Corle C. Zimmerman, *The Changing Community*. New York, Harper & Brothers, 1938. E. S. Bogardus, *Sociology*. New York, The Macmillan Company, 1941, p. 176.

TABLE 1. NUMBER OF FIRMS IN OPERATION AND RATES OF CHANGE *
Nonagricultural Industries

| Industry | Number of firms, thousands | | | | | Average annual rate of change, per cent | | | |
|---|----------------------------|---------------|---------------|---------------|---------------|---|---------------------------------|---------------------------------|---------------------------------|
| | Sept., 1941 | Dec., 1943 | Dec., 1945 | June, 1946 | Dec., 1946 | Sept., 1941- Dec., 1943 | Dec., 1943- Dec., 1945 | Dec., 1945- June, 1946 | June, 1946- Dec., 1946 |
| Mining and quarrying..... | 23.4 | 26.0 | 26.3 | 27.2 | 28.0 | + 4.8 | + 0.6 | + 7.0 | + 6.0 |
| Contract construction..... | 243.8 | 147.1 | 189.2 | 232.2 | 247.9 | -20.1 | +13.5 | +50.6 | +14.0 |
| Manufacturing..... | 225.8 | 227.6 | 262.5 | 287.8 | 307.8 | + 0.4 | + 7.4 | +20.2 | +14.4 |
| Transportation, communication, and other public utilities..... | 209.2 | 187.9 | 206.1 | 216.8 | 222.6 | - 4.7 | + 4.7 | +10.7 | + 5.3 |
| Wholesale trade..... | 146.2 | 114.0 | 143.2 | 160.1 | 169.0 | -10.5 | +12.1 | +25.2 | +11.4 |
| Retail trade..... | 1,620.8 | 1,318.0 | 1,493.5 | 1,614.5 | 1,674.1 | - 8.8 | + 6.5 | +16.9 | + 7.5 |
| Finance, insurance, and real estate. | 285.0 | 267.5 | 286.0 | 294.8 | 298.5 | - 2.8 | + 3.4 | + 6.2 | + 2.5 |
| Service industries | 643.8 | 547.5 | 617.3 | 661.2 | 696.6 | - 7.0 | + 6.2 | +14.7 | +11.0 |
| Total, all industries..... | 3,398.0 | 2,835.6 | 3,224.1 | 3,494.7 | 3,644.6 | - 7.7 | + 6.6 | +17.5 | + 8.7 |

* From *Survey of Current Business*, July, 1947, p. 16.

move elsewhere. Community progress, therefore, not only depends upon maintaining the number of agencies, enterprises, and institutions needed to supply the needs and wants, but these organizations must also have the *standard that is required in order to satisfy the demands.*

We have many examples of communities that are declining. In most of them the major reason lies in the lack of industrial opportunity. For example, in the past, scores of American communities were built on the lumber industry. When the forests were depleted, the sawmills that employed so many of the community workers were shut down. Some of these communities were successful in attracting other industries to take the place of the sawmills and were thus able to retain their position as communities. Others have failed to make the transition. Their population and their property values have rapidly dwindled. What is left of them can no longer be regarded as communities in themselves but rather as outlying portions of some other more adequate centers. The oil industry, like lumber, has also been the basis of the rapid rise of communities and the equally rapid decline when the wells were pumped out. Progress, therefore, can be measured by the way in which the community maintains and improves the opportunities in the various fields of economic and social relations.

SHIFTS IN THE POPULATION

Every citizen has a role in the maintenance of the progress of his community. Being a free person, however, it is certain that he is not bound to support inefficiencies, incompetence, or obsolescence, and he is most certain to be sensitive about his opportunities for employment and economic outlook; he is sure to go where he can get the most for his money, the best service possible, and the best job possible.

Traditionally the American population has always been characterized by a high degree of mobility. This has always been a problem for stable community development. *But never before has there been an internal population movement of such magnitude as has taken place in the last few years—*between 1940 and 1947 some 44 million persons changed houses within the same county; 13 million had gone from one county to another in the same state; 12 million had changed their residence to another state! The farm population was the greatest loser in this migration. It was estimated that 3.2 million left the farms. The Far West Pacific coast states attracted 94.2 per cent of the migration, and as a result, the region gained 4 million, or 40.9 per cent, in population. Nine states in the South, Central North, and Northwest find they have a smaller population now than they had in 1940. In all, 28 states experienced a *net loss* through migration; 20 states and the District of Columbia had a combined *net gain* of 5.6 million. The largest gain

TABLE 2. NUMBER AND PERCENTAGE DISTRIBUTION OF THE POPULATION OF THE UNITED STATES BY SIZE OF COMMUNITY, 1920-1940*

| Classification by size | Number of places | | | | Per cent of total population | | | |
|--------------------------------------|------------------|--------|--------|--------|------------------------------|-------|-------|-------|
| | 1910 | 1920 | 1930 | 1940 | 1910 | 1920 | 1930 | 1940 |
| Places of 1,000,000 or more..... | 3 | 3 | 5 | 5 | 9.2 | 9.6 | 12.3 | 12.1 |
| 500,000-1,000,000..... | 5 | 9 | 8 | 9 | 3.3 | 5.9 | 4.7 | 4.9 |
| 250,000-500,000..... | 11 | 13 | 24 | 23 | 4.3 | 4.3 | 6.5 | 5.9 |
| 100,000-250,000..... | 31 | 43 | 56 | 55 | 5.3 | 6.2 | 6.1 | 5.9 |
| 50,000-100,000..... | 59 | 76 | 98 | 107 | 4.5 | 5.0 | 5.3 | 5.6 |
| 25,000-50,000..... | 119 | 143 | 185 | 213 | 4.4 | 4.8 | 5.2 | 5.6 |
| 10,000-25,000..... | 369 | 465 | 606 | 665 | 6.0 | 6.7 | 7.4 | 7.6 |
| 5,000-10,000..... | 605 | 715 | 851 | 965 | 4.6 | 4.7 | 4.8 | 5.1 |
| 2,500-5,000..... | 1,060 | 1,255 | 1,332 | 1,422 | 4.1 | 4.1 | 3.8 | 3.8 |
| 1,000-2,500..... | 2,720 | 3,032 | 3,087 | 3,205 | 4.6 | 4.5 | 3.9 | 3.8 |
| Incorporated places under 1,000..... | 9,112 | 9,825 | 10,346 | 10,083 | 4.3 | 4.0 | 3.6 | 3.3 |
| Unincorporated territory..... | ..... | ..... | ..... | ..... | 45.5 | 40.3 | 36.4 | 36.4 |
| Total..... | 14,094 | 15,579 | 16,598 | 16,752 | 100.0 | 100.0 | 100.0 | 100.0 |

* Source: *Statistical Abstract of the United States*, 1947, p. 14.

for a single state was that of California—42.1 per cent, compared with the gain for the United States as a whole of 8.9 per cent.²

More than 60 per cent of those who migrated admitted that they left their former community in order to improve job opportunity. The newly established and expanded manufacturing industries of California and the Pacific states served as a lodestone, attracting millions of workers, especially young people from the other states.

This landslide of population shift has made many communities strongly conscious of the job opportunity which can be provided by an adequate development of manufacturing industry. It undoubtedly is also a major contributing factor in the widespread popular interest now being taken in small plants. It is, in short, a recognition of the importance of the small plant to the present and future progress of the community.

We may conclude, therefore, that community progress rests mainly with the various business and service leaders, and more especially does it rest heavily upon the shoulders of the local manufacturers.

TYPES OF COMMUNITIES

It would seem from a glance at Table 2 that in 1940 there were some 16,700 organized communities in the United States and that from decade to decade they are playing a changing role in our national life. It should be noted, however, that it takes more than incorporation to make a community.

The people living in unincorporated places constituted a little more than a third (36.4 per cent) of the 1940 population, and the 1950 Census will no doubt reveal that they are even a smaller ratio. Nevertheless, they are not detached floaters—they live in the rural areas of recognized communities of which the cities are, as a rule, the centers. It is a misnomer to speak about "rural communities," even though there are closely knit settlements of farmers who have many common interests and activities; such settlements do not provide anything like all the needs and wants of their farm families. These farmers depend on the "trade center" for supplying many of the services and goods they need; their children, as a rule, attend high school there; their sons and daughters find jobs in the town's factories, stores, or services; they "go to town" for medical and dental service; they market their produce there; they engage the city undertaker on the last call, even though they may be buried in a country graveyard! It is a mistake to think that the farmers' interests stop at the corporation line of the city which is the center of their community.

² *Current Population Reports*, Washington, D.C., U.S. Bureau of the Census, (1) Series P—20, No. 4; Oct. 7, 1947; (2) Series P—20, No. 14, Apr. 15, 1948; (3) Series P—25, No. 12, Aug. 9, 1948.

What we have just noted in regard to the people living in unincorporated territory may also be said of numerous villages and small cities. They are merely outposts of the main shopping center where some of the wants and requirements of folks are more or less adequately met. Their relation to the total community may be somewhat illustrated by the story of a sociologist who was traveling through the state and came to a small village. Not having noticed the name of the village on any highway marker, he stopped a man on the street: "What community is this?" he inquired. "Just what is a community?" replied the man. "Well," said the visitor, "I guess a community is a place where the people work together, worship together, and live together." After some reflection the man answered by saying: "I guess this isn't a community; it's just a place."

These small villages and cities, however, often have a much greater industrial and business potential than is recognized by the local people, and the total progress of the total community depends to no small extent upon the stimulation and development of these potentials.

Referring again to Table 2, we can draw the conclusion that the number of complete communities is much less than the number of incorporated places and that each such community has an outreach including a population which is often larger than that which is within the corporation limits. To be sure, these communities will vary widely in their dominant characteristics. Some may be said to be predominantly *agricultural communities*—the major part of the population get their living either through farming or through processing of food and fiber raised on the farm; their industries relate closely to what is required in farming. Other centers may be referred to as *industrial communities* where, like Milwaukee, Detroit, or Akron, the dominant interest is industrial—production of goods not necessarily related to the needs of the area. Still other centers may be referred to as *mining communities*, where mining is the major and dominating activity. Especially the larger cities may perhaps be referred to as *metropolitan communities* because the urban interests overshadow the interests of the outlying areas and they draw their requirements, as they draw their population increase, from far-flung communities throughout the whole nation.

It would seem that the larger cities have for the most part slowed their growth, though the population shift to which we have just referred has resulted in a number of outstanding exceptions, such as the cities on the West coast, Detroit, Milwaukee, and a few others where there has been noteworthy industrial expansion. The birth rate in the population of the larger cities falls far short of being adequate for maintaining even *status quo*. Were it not for the migration of youth from the farms and rural areas, the decline of the large cities would be much more pronounced. The birth rate of rural America, however, is $1\frac{1}{2}$ times what is needed to maintain the

rural population. Add to this the fact that as the mechanization of farming makes fewer occupational opportunities on the farm, it is to be expected that the industrial and business opportunities of the cities would draw the rural youth.³

It seems, however, from a study of Table 2 that most of the trend is in favor of the cities from 5,000 to 100,000 population and more especially those of from 5,000 to 50,000. This does not exclude the growing strength of a small portion of thriving little cities under 5,000. This increasing importance of "middle-size" cities is further evidenced in the trend of locating new plants in smaller cities and towns. Cities of 10,000 to 100,000 population were reported by the National Industrial Conference Board as being the most popular places for plants that were established from 1940 to 1947. Only one-third of the plants built or acquired since 1940 are in cities of 100,000 or over. Of plants acquired before 1940, close to one-half were in cities of that size. Also it is to be noted that almost 30 per cent of the plants established since 1940 are in towns of 10,000 or less. Prior to 1940 only 20 per cent of the plants were built in these small centers. In other words, industry is becoming an increasing influence in furthering progress in these smaller communities throughout the nation.

ROLE OF THE SMALL PLANT IN THE HISTORY OF COMMUNITIES

From what we have just noted, it is clear that every industrial plant, large and small, is located in some community. Many of these plants have had a very interesting role in the history of the community in which they are located. Most of them were established to meet the needs that were very evident in the community and the area and started as small plants—under the definition we have here accepted. For example, in 1840 there was a total of 1,420 woolen mills scattered mostly through the New England states. They had an average invested capital of only \$11,200, and the average value of their annual product was less than \$15,000. On the average, they employed 14 workers. By 1860 the number of plants had increased to 1,909. The average investment had gone up to almost \$24,000 per plant. The average output had more than doubled to over \$36,000 per year, and the size of the plant had also increased to the average of 25 workers. In 1860 the 1,091 cotton mills averaged 112 workers per mill.⁴

To no small extent these textile industries were the cornerstones of New

³ National Resources Committee, *Our Cities, Their Role in the National Economy*. Washington, D.C., Government Printing Office, p. 10.

⁴ H. U. Faulkner, *American Economic History*. New York, Harper & Brothers, 1943. Chap. 13, "The Role of the Factory System."

England communities. The metal industry had a similar beginning and laid the foundation for what are now great steel and iron centers in the United States.

The economic history of Wisconsin to no small extent reflects the panorama of industrial development for the nation as a whole, though not every section has undergone quite the same changes. The various periods in Wisconsin economy have each contributed major additions to the industrial developments of the state.

The first interest that attracted settlers to Wisconsin centered in the lead and zinc mines of the southwestern part of the state. These miners needed the tools and the equipment for mining, hauling, and smelting the ore. Some of the first industries of the state centered around the production of these tools. Although mining today contributes only a small amount of the state's income, the production of mining machinery and tools still remains a considerable industry.

The mining gave way to wheat growing, and during the early days of Wisconsin statehood wheat had become the main source of the gross income of the state. As late as 1880 Wisconsin boasted of 754 flour mills located in almost every county or section of the state where wheat could be grown. The wheat farmers needed plows, harrows, drills, threshing machines, and many other types of farm machinery. To fill these needs many ingenious inventors and farseeing industrial leaders established small factories. Among these was Jerome Increase Case, who arrived in Wisconsin during the winter of 1842-1843 with a "Groundhog" threshing contraption which was little more than a wooden box carrying a spiked cylinder to shred the grain heads. This was Wisconsin's first threshing machine that took the place of the old flail and threshing floor. Case rented a shop in Racine, in a short time had vastly improved his contraption, and in 1880 had incorporated as the J. I. Case Threshing Machine Company. This "factory" in 1850 was regarded as the largest factory in the United States west of Buffalo. It was 30 feet wide and 80 feet long. The employees were not paid in wages but with grocery and store orders. Today that same company has a capital stock of over \$28 million and its 1948 payroll included more than 12,000 employees. It now has branch factories in several other cities of the United States. J. I. Case has played an important role in the city of Racine. Wheat growing is today a less significant part of the state's annual income, and only 27 of the 754 flour mills remain in operation as flour mills—many having been converted to other uses. While wheat growing has moved on to the West, J. I. Case products made in Wisconsin go wherever wheat is grown.

The same may be said for Allis-Chalmers of West Allis, near Milwaukee. It, too, belongs in the category of century-old plants, making plows, harrows, tractors, and other farm implements.

Van Brunt Company, Horicon, is still another farm-implement company with another long record, dating back to the time when the wheat grower lost much of his crop because he sowed his grain broadcast and was followed by passenger pigeons that ate a large part of the seed. This company was founded by two brothers, Daniel and George, who invented the fluted force-feed seeder which covered the grain as it was planted. Today the drills, cultivators, and plows of the Van Brunt Company (now a part of the John Deere Company) are utilized throughout the grain-growing world. Although flour production has left the state, the manufacture of flour-mill machinery still constitutes a major item in Wisconsin industry. Whereas wheat at one time constituted 40 per cent of the state's income, today more than 40 per cent of the state's income is from machinery made in plants which had their start in the days when Wisconsin was a wheat-growing state.

Wheat growing gave way to lumber in Wisconsin, and for several decades the lumberjack and the sawmills dominated Wisconsin's industrial life. Here, too, the requirements of the industry for tools and machinery stimulated the inventive ingenuity of the industrial leaders to create the plants to furnish what lumbering demanded. Lumbering, like wheat, reached its peak and passed on to the West. Today only a small number of communities that were built around sawmills and lumber still have lumbering as their major industry. However, the manufacturing of saws, planers, and woodworking machinery, which started back in days when lumbering was dominant, is still being carried on in a very much improved form in Wisconsin industries.

As lumber went out, dairy farming came in. Today Wisconsin is everywhere known as the "dairy state." Again we see that industry responds to the changed demands—hundreds of small dairy and cheese plants have sprung up in communities all over the state, but the machinery and equipment associated with dairy farming have brought forth many other solid industries, most of them small, throughout the state. Some of these plants specialize in barn equipment; others in farm dairy equipment; others in the production of packages for dairy products.

Only a few major crops claim an important role in Wisconsin agriculture, and these are associated primarily with the canning industry. Here, too, Wisconsin industry has responded to the producer's call for better equipment and better machinery.

Nor should the importance of the automobile and automotive transportation be overlooked in the history of any community. Wisconsin is an important producer of trucks, cars, and tractors. But the growth of the automobile industry has to a large extent depended upon improvements of highways and building of ribbons of concrete. In this, as in the other fields, Wisconsin industrial leaders have responded, and as a result this state ranks high among the states that produce the heavy machinery and equipment

for road building—the power shovels, draglines, cranes, bulldozers, scrapers, and other earth-moving equipment. Although many of these manufacturing plants can no longer be classified as small plants, they started as small enterprises and many of them still depend heavily upon small plants to produce parts and specialized equipment.⁵

One more aspect of the industrial beginnings which had a marked influence on the history of communities has been that of electric utilities. Fairly typical of the stages through which this industry has moved to become a basic factor in our urban and rural existence is the history of the Wisconsin Valley Electric Company—a history which could be duplicated over and over again in other sections of the country.

The beginning of the Wisconsin Valley Electric Company is typical of many of the early electric-light and power companies that have since merged into larger and more efficient systems. This company was started in Wausau, where townsfolk began to think about electric lighting as early as 1883. Hotly discussed indeed were the schemes for an electric-lighting system. Civil War veterans sat on the sunlit benches in front of the Wausau stores and talked about the new marvel of science. One discussion centered around the proposal that Rib Mountain be illuminated so brilliantly that people for 20 miles around would be independent of the sun and farmers could work their farms at midnight as well as at noon. The plan never quite materialized, but it did serve to bring the advantages of a new lighting system to the attention of the public.

The city's first electric light was furnished by a privately owned dynamo installed in a sawmill, now a lumber yard. Attempts to organize an electric-light company proved futile until 1889, when a 20-year franchise was granted the newly organized Wausau Electric Company. The company's plant was built adjacent to what is now the bus garage, and this plant supplied the current for the first electric street lamps along Third Street, the town's main business thoroughfare.

A civic controversy flamed for several years over the question of a municipally owned lighting plant, but it was finally decided that power should be purchased from a privately owned source.

Three years after the turn of the century the Wausau Electric Company leased a water-power site, and the next year it increased its capital stock. The new capital enabled the company to build a hydroelectric plant at the south end of Clark Island. The stock was again increased in 1906, in order to further develop power sources. It was still a small plant.

⁵ For a brief and interesting presentation of Wisconsin's industrial history, see Francis F. Bowman, *Why Wisconsin*. Published by the author, Madison, Wis., 1948. Also see *Classified Directory of Wisconsin Manufacturers*, 1948. Milwaukee, Wis., Wisconsin Manufacturers Association.

Soon after Wausau tasted the delights of electric lights, the men in front of the stores began talking about a street railway. They frowned on the dubious honor which Wausau held, that of being the largest Wisconsin city without a street railway. It was not long before businessmen did something about the situation, and in 1906 the Wausau Street Railway Company was organized, with a capital stock of \$60,000.

The electric company gave the street railway company permission to use the Plumer mill as a powerhouse in order to avoid current interferences between the two companies. The railway company operated a small generator in the mill for over a year, but the officials of the railway company were becoming convinced that joint ownership of the two companies would increase both efficiency and profits. They therefore purchased the electric company in March, 1908, and shortly thereafter their decision reaped dividends. A gross earning of \$18,902 was reported for the first 6 months, and a dividend declared at the end of the first year.

The taste of success lingered with the Wausau businessmen. "We did it this far," they told each other. "Why stop now?" They did not stop but instead formulated a long-range program for expansion of operations. In 1915 they began a new era in the state's electric industry when they changed the name of the Wausau Street Railway Company to the Wisconsin Valley Electric Company. Using efficiency and service as its bywords, the new company was to extend its operations into seven northern Wisconsin cities. It is now an important part of a wider organization, the Wisconsin Public Service Corporation.

This typifies the development of the electric utilities that today serve a large proportion of both urban and rural homes and provide the power for hundreds of small manufacturing plants throughout the state.

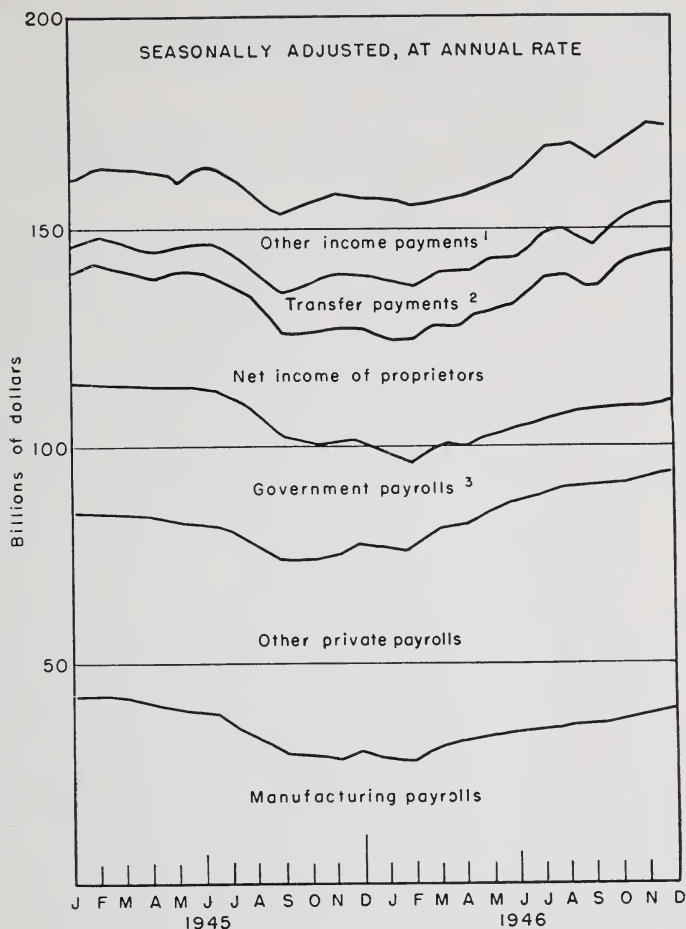
The histories of these companies are absorbing because they are symbolic of the growth of similar companies all over the nation. Starting as small isolated companies, they became in time interconnected and then integrated with larger companies, developing finally into strong, efficient units of public service.⁶

ECONOMIC IMPORTANCE OF SMALL PLANTS TO COMMUNITY PROGRESS

It is important to keep in mind the fact that every manufacturing plant, large or small, is located in some community and has an important role in the economic life of that community. We have already indicated that com-

⁶ From *Builders of a Commonwealth, Men behind the Corporation*, pp. 34ff. (The Wisconsin Public Service Corporation), unpublished manuscript obtained from Mr. M. H. Montross, vice-president, Wisconsin Public Service Corporation, Wausau, Wis.

CHART 1. INCOME PAYMENTS TO INDIVIDUALS, 1945 AND 1946



¹ Includes net rents, royalties, dividends, interest, private pensions, compensation payments, and miscellaneous items.

² Major items included are social insurance benefits, the government's contribution to family allowances paid to dependents of enlisted military personnel, mustering-out payments to discharged servicemen, and veterans' pensions, compensation, and readjustment allowances.

³ Represents pay of Federal, state, and local government employees, and pay of the armed forces in this country and abroad.

SOURCE: *Statistical Abstract of the United States, 1947*, Bureau of the Census, U.S. Department of Commerce, Washington, D.C., 1947, p. 270.

munity progress depends to a large extent on jobs. Jobs spell purchasing power and paid-up taxes. Consequently, the three economic factors that best reflect the contribution made by small plants to the economic progress of the community are *jobs*, *payrolls*, and *taxes*.

Making a living depends on jobs and the small plants constitute a very large and important segment in the providing of jobs for the typical American community.⁷

These jobs must be coined into income as a means of measuring what they mean to the community. Chart 1 gives us a picture of the distribution which each of the important segments of our economy made to the total national income in 1945 and 1946.⁸ In 1946 the total amounted to \$164,950 million. As indicated on Chart 1, manufacturing payrolls constituted approximately 22.2 per cent of the total payments made to individuals in 1945 and 1946. This amounted to approximately \$37 billion of the total income of nearly \$165 billion, or a per capita income for manufacturing of \$2,626, somewhat above the average per capita income payments to all individuals.⁹ A small manufacturing plant employing 50 workers means, therefore, an income of over \$131,000 to the community.

How is this income of the worker distributed? Table 3 gives us a rather vivid picture of what such an industry would mean to the local community. It would go a long way toward supporting the various business establishments as well as contributing to the support of schools and government, to say nothing of what the industry itself pays in the way of taxes. Taking Wisconsin as an example and omitting entirely the crippling Federal taxes which must be paid by industry, the income tax by individuals amounted to nearly \$31 million in 1948, or 8.61 per cent of the total income of the state. On the other hand, the income tax paid by business corporations amounted to \$33.6 million, or 9.35 per cent of the total state taxes. In other words, aside from the general property tax, each manufacturing plant on the average pays more tax than the workers employed by it. There is little wonder, therefore, that there is so much rivalry among communities to obtain new manufacturing establishments.

THE SMALL PLANT IN GOOD TIMES AND BAD

In appraising the role of small plants and community progress, two other facts should not be overlooked. One is that a large proportion of the new ventures fail in their infancy. The other fact is that the average life of most

⁷ Robert S. Lynd and Helen Merrell Lynd, *Middletown in Transition*. New York, Harcourt, Brace and Company, Inc., 1937, Chap. II. "Getting a Living."

⁸ *Statistical Abstract of the United States, 1947*. Table 302, p. 269.

⁹ See *ibid.*, Table 304, p. 272.

TABLE 3. AVERAGE MONEY INCOME, EXPENDITURES, AND SAVINGS OF FAMILIES IN CITIES, BY INCOME CLASS, 1944 ^a

(Preliminary; estimates based on sample survey of 1,700 consumer units in cities of 2,500 inhabitants or more.)

| Families of 2 or more persons | Annual money income after personal taxes | | |
|--|--|---------------------|---------------------|
| | \$2,000– \$2,500 | \$2,500– \$3,000 | \$3,000– \$4,000 |
| Per cent of families in each class | 14.0 | 14.7 | 23.0 |
| Average number of persons ^b | 3.10 | 3.13 | 3.69 |
| Average number of earners ^c | 1.27 | 1.31 | 1.57 |
| Money income after personal taxes ^d | \$2,259 | \$2,757 | \$3,480 |
| Expenditures, current | 2,051 | 2,410 | 2,838 |
| Food ^e | 797 | 913 | 1,043 |
| Clothing | 283 | 364 | 462 |
| Housing, ^f fuel, light, and refrigeration | 394 | 430 | 488 |
| Household operation | 93 | 110 | 140 |
| Furnishings and equipment | 60 | 88 | 95 |
| Automobile | 69 | 105 | 119 |
| Other transportation | 50 | 51 | 63 |
| Medical care | 104 | 123 | 149 |
| Personal care | 48 | 56 | 65 |
| Recreation | 55 | 63 | 82 |
| Tobacco | 41 | 48 | 59 |
| Reading | 22 | 27 | 31 |
| Formal education | 9 | 15 | 13 |
| Other | 26 | 17 | 29 |
| Personal taxes ^d | 180 | 270 | 402 |
| Gifts and contributions | 86 | 119 | 119 |
| Net savings or deficit | 122 | 228 | 523 |
| War bonds ^g | 147 | 233 | 316 |
| Life- and annuity-insurance premiums | 70 | 83 | 109 |
| Other ^h | –95 | –88 | 98 |

^a Taken from *Statistical Abstract of the United States, 1947*. Table 307, p. 274.

^b Family size based on equivalent persons, with 52 weeks of family membership considered equivalent to 1 person, 26 weeks equivalent to 0.5 person, etc.

^c Earner defined as a family member who worked for pay (as wage or salary worker or on his own account) at any time during year.

^d Personal taxes (income, poll, and personal property) have been deducted from money income. Total money income may be obtained by combining amounts shown for both items. Inheritances and large gifts are not considered current income; inheritance and gift taxes excluded from personal taxes.

^e Includes expenditures for alcoholic beverages.

^f Includes rents for tenant-occupied dwellings and for lodging away from home and current operation expenses of homeowners. Excludes principal payments on mortgages on owned homes.

^g Value of bonds purchased less those cashed.

^h Represents differences between income and expenditures plus net war-bond purchases and insurance-premium payments. Includes amounts deducted for social security, retirement plans, etc., not available separately.

concerns which survive the first few years is subject to the same ills that befall people—carelessness and old age. Assured security has never been the experience of life in business. It takes exceptional management to enable an industry to survive the hazards of change and shifting market demands. Furthermore, the recurring periods of economic stress generally claim a larger number of small establishments than they do of larger ones. Seldom does the small plant have an opportunity to accumulate sufficient reserves to meet the shocks of severe economic fluctuations. Table 4 reflects the impact of depression and the impact of war demands upon the strength of the industrial life of the nation. A total national income of more than \$83 billion was practically cut in half as the nation dropped into the depression trough of 1933. Ten years later it had bounded back to an unprecedented income of more than \$149 billion. By 1946 the net increase in the number of manufacturing plants had reached even a much higher level (see Table 1).

TABLE 4. NATIONAL INCOME BY INDUSTRIAL DIVISION *
1929–1933–1943

| Classes of industry | National income, millions of dollars | | |
|---|--------------------------------------|--------|---------|
| | 1929 | 1933 | 1943 |
| Agriculture | 6,772 | 2,992 | 13,518 |
| Mining | 1,919 | 605 | 2,485 |
| Manufacturing | 20,897 | 8,410 | 48,591 |
| Food, beverages, tobacco | 2,478 | 1,580 | 3,829 |
| Paper, printing, publishing | 2,191 | 1,166 | 2,494 |
| Textiles and leather | 3,187 | 1,869 | 5,048 |
| Construction materials and furniture .. | 2,169 | 567 | 2,886 |
| Chemicals and petroleum | 1,833 | 753 | 3,580 |
| Metals, machinery, and transport equipment | 8,169 | 2,128 | 28,487 |
| Rubber and miscellaneous | 870 | 347 | 2,267 |
| Construction | 3,547 | 541 | 4,332 |
| Transportation—total | 6,982 | 3,606 | 9,685 |
| Power and gas | 1,427 | 1,027 | 1,667 |
| Communication | 1,046 | 639 | 1,176 |
| Trade—total | 11,878 | 6,322 | 17,551 |
| Finance—total | 10,136 | 4,768 | 9,165 |
| Government—total | 6,407 | 6,631 | 26,268 |
| Services | 8,315 | 4,589 | 10,362 |
| Miscellaneous | 4,000 | 2,192 | 4,592 |
| Total national income | 83,326 | 42,322 | 149,392 |

* From Bureau of the Census, U.S. Department of Commerce, *Statistical Abstract of the United States, 1947*. Washington, D.C., Table 303, p. 271.

In this picture, however, it should be noted that manufacturing plants are apt to be more stable than other forms of small business. As a rule the community does not lose the entire investment when a manufacturing plant goes bankrupt—for the most part, it implies the change of ownership but a continuation in one way or another of a large proportion of the investment. This was conspicuously the case with reference to the depression. Although many manufacturing establishments were unable to produce incomes, they had nevertheless considerable invested capital standing by and ready to resume earnings as soon as the economic opportunity permitted.

Since the depression of the 1930's, unemployment compensation, employers' liability, and other aspects of insurance have become common in a large proportion of our manufacturing establishments and have done much to cushion the impact of unemployment, accident, or illness and to stabilize the purchasing power produced by industry.

In the transition from one period to another manufacturing establishments have suffered a greater total loss than they have generally suffered in the depression. For example, when the timber supply disappeared, sawmills could not be converted as a rule into other uses. This was not so much the case with the flour mills, many of which were converted into paper mills, hydroelectric plants, or producers of stock feed. In every instance, however, communities have had to face the constant problem of industrial adjustment to change. Allied Engineers, Inc., tells this story of Cadillac, Mich.:

Cadillac has completely recovered from the shock of losing its industries allied with the lumbering business. In other words, it has passed through its transitional period and now faces the future with a diversified industrial life planted upon new and more firm foundations. On Jan. 16, 1946, there were 1,607 persons gainfully employed in Cadillac's 22 diversified industries or, based upon one wage earner to the family, these industries were furnishing a livelihood for a population of an estimated 5,142 persons, or approximately 51 per cent of the population of the city.

After making due allowance for the facts that in some families there is more than one wage earner in an industrial plant, that wage earners would average larger families than the average for Cadillac, and that some of these wage earners reside outside the city, we can still say that the industries of Cadillac furnish a direct livelihood for approximately 50 per cent of the population of the city. This figure is low for a large industrial city but a substantial figure for a small city of Cadillac's type. It should be remembered that the more Cadillac can grow industrially and at the same time hold down the percentage of population directly dependent upon its industries just so much more stable will the city become and the less affected by depression years and temporary industrial slowdowns.

One of the fortunate things about Cadillac's present industrial life is the diversification of its industry.¹⁰

This, then, is the picture with reference to good times and bad times. Where there is a wide diversification of industry in the community and where industry has had sound financing and good management history, there is a reasonable likelihood that depression will have slight effect upon the economic progress of the community.

One further contribution made by many of the industrial plants, especially those located where they draw their workers from large areas of the surrounding rural communities and small villages, is that they do much to improve the prosperity of the whole section. Many of these industries have adopted production policies of dovetailing their operations with the seasonal demands for agricultural labor. In this way they have been able to bring a more stable income to the whole area, enabling the purchasing power of the whole community to be maintained at a very much higher and more stable level. This policy of many small plants contributes to the stability of the whole business composite of the community.

WHAT THE SMALL PLANT CONTRIBUTES TO BUSINESS EDUCATION AND TRAINING

One of the most valuable contributions which the small plant makes to community progress is the opportunity that it affords the worker for gaining skills and a better understanding of the various jobs required by manufacturing. Many of the managers of small plants maintain regular training programs for their employees. Many of them send their supervisory personnel for special courses and conferences to increase their knowledge and skill in handling management problems. All this effort tends to place the worker in a more stable earning capacity.

Incidentally, the position of topflight management of the small plant is in itself one of America's greatest training positions for the upward promotion of managers. In Wisconsin, during the year 1948, no less than a dozen small plant managers were appointed to high positions in larger industrial organizations. This is a problem which the smaller industrial plant has to meet, because success depends upon the maintaining of a high level of management skill and ability and also continuity of sound management policies. There is need, therefore, for a more adequate training resource for topflight management of small plants.

Along with the training opportunity just mentioned, a large proportion of

¹⁰ From bulletin published by *Allied Engineers, Inc.*, 2608 Penobscot Building, Detroit, Mich.

the smaller plants, in cooperation with the State Vocational School System, maintain an apprenticeship plan, especially for the more skilled trades. These constitute more than 80 per cent of the total apprenticeships. Finally, the small plant is a right arm to the local vocational schools and often provides these schools with part-time instructors as well as much equipment.

MANAGEMENT'S OPPORTUNITY IN COMMUNITY LEADERSHIP

There is probably no other type of industry or business which schools management for leadership to the extent that is provided by manufacturing plants, large and small. Modern management recognizes increasing responsibility for the advancement of the social and economic welfare of the community in which their plant is located. The very fact that success requires sound and considered planning from many different angles, starting from the securing of raw materials to the final marketing of the finished product, places the managers in the position of seeing the possibilities and prospects of this same procedure in the administration of the community. As a rule, therefore, industrial managers are among the most active and helpful in community leadership. Furthermore, they take an active part in encouraging their employees and more especially their junior executives in taking an active part in the civic affairs of the community. Many are to be found serving on city councils, county boards, various commissions, and school boards, as well as taking a leading part in local clubs and organizations.

Some managers have been able to completely plan and carry out programs of creating beautiful and satisfying industrial communities. This is well illustrated by the achievements of the Kohler Company of Kohler, Wis. (described more in detail in the final section of this chapter). The late Walter Kohler, son of the founder of the company, served as one of Wisconsin's most able governors, and his brother and sisters were conspicuous for their outstanding services to their state as well as to their local community.

The opportunity which managers have for creating a better understanding of the importance of management in our total economy is of immense value to the perpetuation of our free enterprise. Some are accomplishing this through annual "open-house" programs to which are invited high-school youth as well as the people of the entire area. This has been especially helpful to those manufacturers located in the smaller cities and who draw their labor supply not only from the city but from the adjacent rural area. Other managers maintain, either through their own organization or in cooperation with other manufacturers, a well-planned program of public relations. This has accomplished a great deal toward a better understanding of what makes

jobs and what it takes to support jobs. The manager has an opportunity to work much more closely with the public schools than has been generally done. Such a close relationship prepares a youth to see the opportunities afforded by his own community and thus leads him to remain in the community rather than seek opportunity elsewhere.

WHAT THE COMMUNITY HAS TO OFFER THE SMALL PLANT

As we have already pointed out, most communities, big and little, are actively interested in attracting new industries to expand their payroll base and employment opportunity. Many states are also very active in attempting to attract new industries into their communities and in developing and expanding their economic resources.

In most states the job of industrial development is assigned to the state Department of Commerce or to some other bureau or office. The Pacific coast states have especially alert and active "recruiting and developing" departments. In self-defense, the Eastern and New England states are now very active in this field and doing an excellent job of it—this is especially true of the bureau in the New York Department of Commerce.

The Southern states are also actively cooperating with their communities in programs of industrial development. A notable example of this is the work of the Tennessee State Planning Commission. In commenting on the manner in which some communities approach the problem of industrial promotion, Mr. Whitlatch, industrial economist for the Commission, says:

Industrial development, as revealed by the actions of numerous community groups, frequently seems to evoke some subconscious change in the participants, causing them to ignore the rules of normal behavior. All too often a community initiates a program of local industrial expansion by holding a group meeting at which a few pep talks are given and a committee is appointed to direct the destinies of the movement. Unfortunately, that usually represents most of the "effort," with both committee and community concluding that some miraculous transformation will result from their joint endeavors. But in those rarer instances where continued efforts are made by the committee—generally appointed from the ranks of local businessmen—little or no attempt is made to apply business principles to industrial development activities. . . .

In several towns, such groups have begun factory buildings on the mere hope that a suitable tenant could be found. At least two of these new structures are on sites well removed from existing water and sewerage lines. Another plant is very poorly located with respect to transportation facilities—highways and railroad—and, in addition, practically no space is available on the site for parking or for possible future expansion of the plant.

Such an expenditure of money in plant construction without a prospective tenant is hazardous enough in itself, but even though some prospects are found, the building may prove unsatisfactory for specific types of operation. In several instances, industrialists are known to have turned down factory buildings being constructed by community groups simply because the dimensions were unsatisfactory, although the total aggregate floor space might meet their needs. . . . Yet, a fast-talking stranger can blow into some towns, promising a new industry in exchange for a fee or a free factory building, and these same normally astute businessmen are likely to end up spending a lot of their hard-earned money on a factory building. Often their action is taken with only a minimum (if any) investigation of the prospective industry or of the individual promoting its location in the community.

Once a community development group has converted its funds into the brick and steel of a factory building, recovery on the investment is dependent on long-term occupancy by a responsible industry. If the tenant proves irresponsible, a heavy loss may be suffered unless new occupants can be found for the building. Of course, some community groups haven't taken that precaution—they simply gave away their collective shirts at the start in order to achieve local development. . . . When such subsidization is done with public funds, the practice cannot be condoned even if the full investment eventually is recovered through rentals.¹¹

As a help to community groups interested in the promotion of a program of industrial development, the Commission has prepared a practical guide. Community groups that follow this guide carefully are sure to avoid many of the pitfalls that are apt to be in the way of those who follow blind enthusiasm.¹²

The Tennessee State Planning Commission not only carries on research helpful to sound industrial development but conducts a very effective service by locating manufacturing firms that are interested in relocating and in making a careful appraisal of their resources and needs. The communities of Tennessee are given this information as a basis for action. Likewise, the Commission furnishes qualified industrial firms with pertinent information about Tennessee locations. The Commission also collects and lists "industrial opportunities," such as inventions and ideas that could be the basis for a new industry or a profitable new item for some established industry.

Many states publish elaborate brochures, setting forth the attractive business and industrial possibilities offered by the various communities and

¹¹ *Tennessee Industrial Planning News Letter*. Nashville, Tenn., Industrial Development Division, Tennessee State Planning Commission, Dec. 1, 1948.

¹² *Partners—Industry and the Tennessee Community*, A Guide to Community Industrial Development. Nashville, Tenn., Tennessee State Planning Commission, October, 1947.

areas. That states can afford to provide their communities with such a service is evidenced by the fact that any new plants brought into the state constitute an important addition to the tax roll. As a rule, too, where such service and counsel are provided the community by the state, there is much less opportunity for the "fast-talking" blue-sky promoter to "unload" on over-anxious local committees and city officials.

General Community Consideration: The local communities themselves, either through their chambers of commerce, city governments, or locally organized industrial development corporations or "foundations," are actively bidding for new plants or expansions of their present ones. Also, most railroads help promote industrial development of the communities along their lines. This interest is all the more enlivened by the fact that many industries are, for one reason or another, seeking relocation or attempting to locate new branches or subsidiary establishments.

Many communities are out to grab "just any industry," without giving due consideration as to whether it fits the local economy or advantageously ties in with the other industries and resources of the area. Then, too, they often overlook the requirements of new or enlarged industry—in the way of sewers, water, streets, power, warehousing, yardage, transportation, to say nothing of what might be needed in the way of satisfactory housing for workers. In these matters the local leaders need to seek sound counsel.

Providing Suitable Industrial Site and Building: Availability of suitable building or building site is generally the first consideration. Many small cities have been handicapped by property owners who attempt to exploit the prospective firm by boosting the price on the desired location. In other instances the prospect desires to rent or lease a suitable building, and it would be necessary to erect one or to go to considerable expense in remodeling one that is already available. In either case considerable investment capital is needed—more than the owner or any local businessmen personally care to risk. As a rule, one of three plans of financing such industrial development projects is used: (1) asking the city to provide the amount; (2) taking up a subscription among the businessmen—"passing the hat"; or (3) organizing an industrial-development corporation or foundation and selling shares to raise the amount needed for carrying out a more continuous program.

Assistance from the City Government: Often the city has suitable land and sometimes a fairly suitable building. Frequently, too, the city administration has a policy of occasionally appropriating a small sum to be spent in "at-

tracting more industry" and in advertising the town (in cooperation with the local chamber of commerce).

There are a number of stock arguments in favor of the city's undertaking this responsibility: everyone benefits, they say, therefore the cost of such promotion should be met from taxes; then, too, city land does not yield any income, and the city could afford to sell or lease it for less: offering a bargain to the prospect; this method spreads the cost and risk so that no one is hard hit. Needless to say, when the city officials by themselves undertake industrial promotion, anything is likely to happen. The chances are that some form of subsidy is likely to be given. There have even been instances where the city was extremely liberal in aiding newcomers and at the same time handed the old, well-established going concerns a boost in the appraisal of their plants, exacting higher taxes from them, and also raising their water and sewer charges.

In spite of the arguments supporting this method of industrial development, it has glaring weaknesses, and wherever considered it should be safeguarded by obtaining competent counsel—from the appropriate state agency, the university, the U.S. Department of Commerce, or the industrial engineer's office of the railroad.

Private-subscription Method: Raising the necessary funds by private subscription—by "passing the hat"—is likely to prove no more sound than city financing. A fast-talking supersalesman can put on a campaign to get the money, especially when a threat of unemployment seems to be facing the town. But the trouble with this plan is that it does not assure adequate controls and it offers no adequate support for a continuous program.

The Industrial-development Corporation: Perhaps the most satisfactory way for the local community to achieve a sound and adequate program of industrial development is that of the development corporation or foundation. It is organized in the same manner as any business corporation, although some are incorporated as "nonprofit" organizations. Generally, too, the investor may either sell his share to someone else or be refunded the amount he has paid. The stock is usually issued in small denominations, \$25 to \$50, and thus a larger number of investors are able to participate, including laborers and farmers. By this method even a small community of 2,000 to 5,000 is able to obtain adequate funds to sustain a long-time program of industrial development.

The industrial-development corporation is not a new device. The one in La Crosse, Wis., is over thirty years old. It has helped more than 50 sub-

stantial industries of that community—some having since grown to be of nation-wide significance. This corporation has always followed a sound, businesslike, and fair policy as regards helping both new plants get a start and old plants expand. Today the La Crosse Industrial Development Corporation is financially better off than ever.

There are some 70 or 80 such local development corporations in Wisconsin, and hundreds of them are scattered through the other states. Now and then one gets off to a poor start, but most of them are active and fairly successful.

A Word about Subsidies: Competition among communities for new industries often leads to a contest to see which one can make “the most attractive offer” and pledge the biggest subsidy. This seems to be much easier than getting together the information essential to presenting the resources which the community has to offer. Sometimes it seems that the local people are more ready to *buy* the industry than they are to *sell* their community to the prospect.

As a rule manufacturers who are seeking a new location do not expect to be given anything more than “a fair shake.” They do not ask that they be given any special advantage which is not given to the firms who are already established. They fully expect to pay their way and do their part in supporting the community. On this point Mr. Charles Luckman, former president of Lever Brothers, has this to say:

When we decide on a location, let us demand a community which affords comfortable modern housing—not only for our factory but also for our people—and within the means their wage standards would provide.

We should feel constrained to inquire into the liberality of the public-school system with the same interest that we analyze the liberality of the local tax structure. We must recognize that the promise of a tax exemption might also mean the exemption of our employees’ children from the educational opportunities which make good citizens. It is incumbent upon us to remember that, while we cannot always build the future for our youth, we can always build our youth for the future.

When we look for plentiful power, we are bound to the corollary of inquiring into the recreational power and facilities of that community.¹³

What Mr. Luckman said expresses pretty well the point of view of most industrial leaders. They wish to locate their plants where they will be able to operate with the efficiency necessary to meet competition’s price. They therefore appreciate having all the pertinent information about the various

¹³ From an address delivered before Newspaper Advertising Executives Association and quoted in *Community Service News*, Yellow Springs, Ohio, May-June, 1948, p. 85.

communities which they may have under consideration to enable them to appraise fully the respective merits of the different locations. They also appreciate courteous and thoughtful help in establishing their business connections and getting organized and set up for operation.

In principle, therefore, the granting of subsidies as a bait for the attraction of new plants is frowned upon. Like a protective tariff granted to infant industries—the infant seems never to mature to the point where it can be weaned. Perhaps an even more valid objection is that it is unfair to the concerns which started on their own and over the years not only have paid their way but have carried their share of support of local organizations, agencies, and government.

In *practice*, we have to admit that in a surprising number of cases subsidies seem to work out fairly satisfactorily, though objection is almost always raised by the management of other local plants. Dr. W. D. Knight made a study covering 130 cases of industrial subsidization in 40 Wisconsin communities during the period 1930–1946. The subsidies consisted of an extensive variety of “easements,” ranging all the way from outright gift of land and building to small financial lifts such as tax exemptions for the period in which the company was getting a start and developing its market.¹⁴

Dr. Knight had expected to find ample evidence to support universal condemnation of the practice. He admits that the study did not justify such a sweeping conclusion. To the astonishment of those who participated in the study, most of the 130 cases seemed to justify the subsidies they received. This may have been due to the character of the local leadership—in giving thoughtful attention to the various factors that assure reasonable success of an enterprise. While the study failed to convict subsidies as being always bad, it does not support or recommend the practice as a wholly satisfactory and happy plan for attracting new industry to the community.

SOME CASES OF COMMUNITY PROGRESS AIDED BY SMALL PLANTS AND ORGANIZED INDUSTRIAL DEVELOPMENT

In order to illustrate the interdependence of small plant and community progress a few cases are presented which show how companies, now well known and large in size, have been started small and with very limited resources by the sheer determination of one man or a few.

These cases, all drawn from Wisconsin's industrial background, have numerous counterparts in other states and should encourage those who ponder their own small projects and hopes, wherever they may be.

¹⁴ W. D. Knight, *Subsidization of Industry in Forty Selected Cities of Wisconsin, 1930–1946*. Madison, Wis., University of Wisconsin School of Commerce, 1947.

Kohler Village
An Industrial Garden Town,
A Manager's Dream Come True

The Kohler Company was organized in Sheboygan, Wis., in 1873 and has been in continuous operation from the start. Like so many of the small industries of those days, the firm attempted to supply the many needs of the agricultural area—making plows, pumps, windmills, horsepower mills, iron watering troughs. Later the firm experimented with enamelware and became widely noted for its enameled grave markers. Eventually it began manufacturing plumbing fixtures, heating plants, electric plants, and precision instruments.

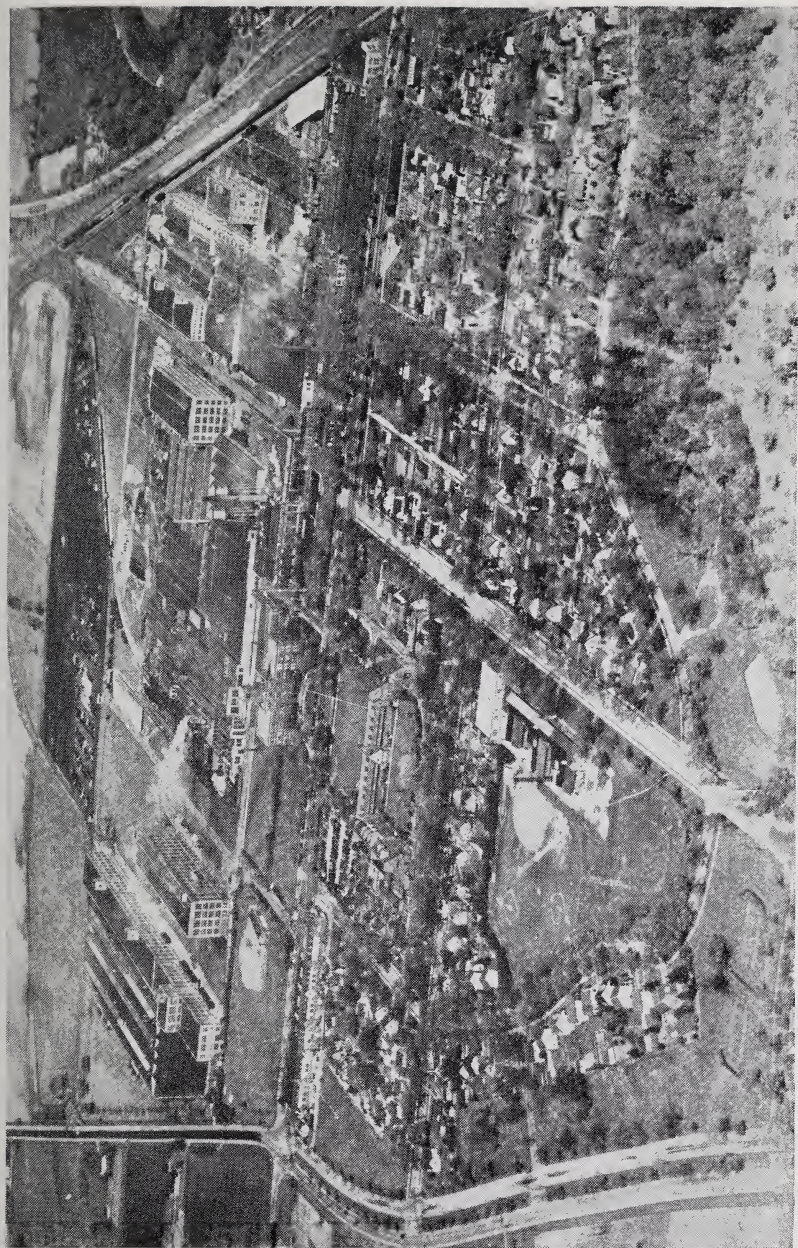
In 1899 the factory was moved to its present location, 5 miles west of Sheboygan. In 1905, Walter Kohler, son of the founder of the company, became its head. He was not merely a manufacturer, as such; he wanted his workers to live in beautiful, happy, and healthful surroundings. He spent time studying European garden-city developments and in consulting with architects, town planners, landscape artists, and engineers. They, too, became interested in building “a beautiful residential community to the west of a modern and well-planned industrial plant.”

Late in 1912 a village charter was obtained, and the layout was beginning to be a reality. Today the village has a population of about 1,800, living in some 450 beautiful houses along wide shady streets, green lawns, and flower gardens, overlooking a landscaped river.

The village is well equipped for *good* living. It is in every sense a self-governing community of homeowners, though the guiding genius of a socially minded leader is evident. It has its own utilities, including an ultra-modern sewage-disposal plant, and water system. It has excellent schools, a beautifully designed shopping district with every kind of merchandising service, a large and beautifully designed clubhouse (a memorial to the founder of the company), and a large and well-planned residence hall for single men of the company organization. This also serves as a center for many community organizations. The community is served by three churches and ultramodern clinic and hospital service.

The people of Kohler participate in many activities that add to the zest of living—recreation club for old and young, a community band of 50 pieces as well as a high-school band and competitive sports.

The company grew from a small plant to one that now has a world-wide market and employs some 4,000 workers. Many workers live in Sheboygan, in surrounding villages, and on farms. However, all share in the achievements of the Kohler community.



Aerial view of the Industrial Garden Village of Kohler, Wis. Kohler Company factories and offices in the background.

This is an outstanding example of high community achievement by industrial management.

Clintonville
Where Industry Dovetails with Farming

At the turn of the century, Clintonville was a small hamlet among the pine stumps of an area where farmers were struggling to make farms. Otto Zachow was the local blacksmith. He became interested in the problem of having to pull many pioneer automobiles out of the deep mud of the badly rutted roads. He worked out a design for applying power to all four wheels. Today this same principle is used in all four-wheel-drive power vehicles. This also explains why Clintonville since 1910 has been a significant producer of Wisconsin machinery.

The 1940 population of Clintonville was 4,134. Yet in 1948 it had an assessed value of over \$10 million. Much of this value for tax purposes is in the seven industrial plants, chief of which is the Four-Wheel-Drive Auto Co. Consequently, the Four-Wheel-Drive is a cornerstone in the support of city, schools, local government, and the public improvements.

This company has long followed a policy of budgeting production so that it dovetails with agriculture. In the fall and winter some 1,400 workers—among them many second and third generation—are on the payroll; in the late spring and summer, when the farm crops and canneries call for help, the plant operates with half or even a third of full staff. A population of over 7,400 draws support from this industry and is included in the Four-Wheel-Drive community. Over 50 per cent of the workers are farm owners; 75 per cent live on farms. Employment at the plant gives the families of the area steady income, and it provides the industry with able and loyal workers. There has never been any labor trouble here. This means a lot to Clintonville and the area within a radius of over 40 miles. The average weekly payroll for 1948 was more than \$95,400, and for the year it amounted to nearly \$5 million.

But aside from providing a large part of the financial base for the community, the management has, from the start, taken an active interest in community progress. This little city has many services that one generally finds only in large cities—a first-class hotel, a fine airport, and an \$800,000 hospital (just being built). Company personnel, including both senior and junior executives, play an important role in city government as members of the city council, school board, planning commission, and other services; also in local organizations and clubs, including the Chamber of Commerce.

*Brillion**A Modern Ironworks in a Small Town*

The Brillion Iron Works employs an average of 300 workers. It does not, therefore, conform to the definition of a small plant. Be that as it may, its management has that close and personal relation with all its personnel and with its community—and these are “personality traits” that more especially belong to the small plant.

The workers at the Iron Works support a total of over 1,200 people—a number equal to the population of the town. However, over 40 per cent of the workers do not live in the city—many are farmers; some commute from a radius of over 30 miles.

The plant is modern in every respect, both from an engineering and from a management standpoint. The personnel director is also training director. The new “administration building” is equipped with excellent rooms for classes and group meetings—used in the evenings by many community organizations.

The management encourages its employees to take an active interest in local government and civic affairs. A considerable number of the city and county officers are Iron Works employees. The company directly helps the youth organizations—high-school band, Boy Scouts, 4H Clubs, and others. An important feature of its community relations is its annual “open house,” when every employee takes pride in serving as host to hundreds of adults and youth of the city and surrounding country. There has never been any labor trouble in this closely knit organization in which everyone feels he is an important part.

*Horicon**Where Farm and Factory Really Merge*

Two brothers, Daniel and George Van Brunt, found their way into Wisconsin about 1860, when wheat was the major source of wealth. They watched the great flocks of passenger pigeons follow the farmer as he sowed wheat broadcast on the plowed ground. Often the birds got more than half the seed before it had a chance to sprout.

These two boys were blacksmiths and real inventors. They soon had a drill, which dropped the grain through a closely set row of fluted iron pipes, planting it in shallow furrows and covering it so that it was out of sight of the pigeons. The increased yield per acre made this drill a popular machine.

The factory was established in Horicon. It produced other farm machinery and came to be well known wherever grain is grown. In 1911 the

firm was reorganized and became a part of the John Deere Co., though the merger has not affected the traditional pattern of management.

The plant has all the characteristics of a small plant and has traditionally become the support of a large area. It employs an average of 850 men and 30 women. Its payroll supports a total of over 3,400 persons, a third larger population than the 1940 population of the city. Twenty per cent of the workers are farmers, and fully as many more live in other cities and villages of the area.

There is a definitely established practice of dovetailing production with agriculture. This gives economic balance to the whole community.

The management takes an active interest in local government and civic affairs. It maintains a well-planned training program in the plant for the employees, and it also provides half-time training for the commercial students of the high school. The plant's recreational program is also tied in with the community.

Baraboo Organizing an Industrial-development Corporation

Baraboo is a small city of about 7,000, located some 40 miles from Madison. It is in a rich agricultural area, and it is also adjacent to Devils' Lake, one of the state's noted parks. It is therefore normally influenced by both the farming and the recreational industries.

The little city is just now recovering from its second "rude awakening." Its first shock came when the show business folded its tents and stole away to the South. It had for years been the home of Ringling Brothers, and the show people were the main support of the town in the wintertime.

It was just recovering from this first shock when the war came. The Badger ordnance plant was located just over the hill from the town, and several thousand ordnance workers came to Baraboo to live. This gave the town an artificial boost into a boom-town attitude.

Then came the real shock—Badger ordnance closed and all but about 1,000 of the workers left and took their purchasing power with them. The local economy went down like a flat tire. There were a few industries, employing about 300 workers—the largest being an obsolete woolen mill. There was not a sufficient number of jobs for the workers of the city, to say nothing of supplying job opportunities for the surplus rural youth. Many workers had to commute to Madison for employment. It was certain that the least little tightening of the economy would be severely felt in Baraboo.

There was only one solution to a predicament such as Baraboo faced—get more manufacturing plants and revive and expand those already there. This called for quick and positive action. The city would have to be zoned; an

adequate factory site would have to be bought and supplied with water, sewers, and railway siding. This called for capital. The Chamber of Commerce could not afford a full-time secretary, to say nothing of financing such a venture, and no one ventured to undertake the job singlehanded.

After a number of preliminary meetings under the leadership of a university economist, steps were taken to organize an industrial-development corporation. Capitalization was set at \$100,000. The purposes of the corporation, as expressed in Article II of the Articles of Incorporation, were as follows:

The business and purposes of said corporation shall be:

(1) To encourage the industrial and commercial growth of the City of Baraboo, Sauk County, Wisconsin, and that area served by and serving the City of Baraboo.

(2) To promote, develop and bring about with the cooperation of the officials of the City and Town of Baraboo, County of Sauk and State of Wisconsin, a city plan for the City of Baraboo so as to make certain that the future development of the City of Baraboo will be beneficial and worth while to all of the citizens of Baraboo and the surrounding areas.

(3) To encourage and give assistance to those industries already located in the City of Baraboo.

(4) To buy, sell, mortgage, and lease real estate and construct buildings thereon and to carry on a general business in the purchase, sale, and leasing of real estate in said County of Sauk and State of Wisconsin.

(5) To do all other acts necessary to effectuate the foregoing purposes for which said business is to be carried on within the State of Wisconsin and especially within the County of Sauk within said State.

Soon after completing the organization, work started. The city council quickly set the wheels turning to have the city planned and zoned. A purchase of 67 acres of factory site was made, and fast work done to get it in proper shape. Then a small plant was built for a manufacturer of electric transformers, employing about 100 workers. The plant was purchased from the development corporation. Then a sporting-goods manufacturer was located in town employing some 75 to 80 workers. Another industry was attracted by the enterprising spirit of the development corporation and leased a site to manufacture the small motors that run the stop-and-go traffic lights. This plant employs about 30 workers and expects to double the number when in full production. Several other prospects are being studied.

This is how any small plant and any small town (and there are thousands of them) can build a more solid economy and point the way to community progress.

CHAPTER 4

GOVERNMENT INTEREST IN SMALL PLANTS

BY

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From the colonial era to the present, governmental agencies and business firms have interacted upon each other. During much of our history, government has been eager to stimulate manufacturing for the economic welfare and for the national progress. Business firms have at all times sought the protection or assistance of the government to assure themselves of freedom of opportunity and the possibilities for expansion and growth. Until the second half of the nineteenth century, there was little conscious distinction between big and small business; until that time all businesses and plants were small, at least when measured by today's standards. After the Civil War, the rapid growth of some industries and technical services—notably steel, oil, and railroads—led to legislation designed to curb excessive power of the largest of the corporations.

It was not until the great depression, beginning in 1929, however, that there were definite proposals designed specifically to assist small plants, in contrast to earlier movements simply to curtail the excesses of monopoly. This is cogently expressed by the authors of the Brookings Institution study *Government and Economic Life* (1939) as follows:

. . . there has been a notable movement in the past decade or two to preserve "small," "independent" business units against the competition of their larger or affiliated rivals. The view that small units need to be protected against the large, if competition is to be preserved, goes back to the early period of anti-trust agitation, more than half a century ago. But more recently this notion has

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Recognition: The author and the Chairman of the Small Plant Committee of the ASME desire to express their very best thanks to Mr. Julius W. Allen, Legislative Reference Section, Library of Congress, for his cooperation and preparation of the historical material and text which was included in this Chapter.

been supplemented by the contention that small business is desirable for its own sake and thus deserves protection apart from its competitive qualities. It has been urged that the maintenance of small units in business enterprise affords a wider range of opportunity for self-expression in economic affairs than would otherwise obtain and that the preservation of opportunity for individual initiative is socially desirable even if a loss in technical efficiency is involved. By others it is contended that, when an industry is organized on the basis of small and independent units, there is assured that ease of entry and adaptability to change which are regarded as essential to the best functioning of a private-enterprise system. Further, it is sometimes maintained that smaller units would be technically more efficient than the larger ones that now exist and that governmental agencies, more effectively than competitive forces, can determine what the optimum size should be.²

POLICIES ON MANUFACTURE DURING THE COLONIAL AREA

By now it is generally recognized that the limitation placed upon manufacturing in the colonies by the British government was one of the principal sources of resentment that fanned the flame of revolution.

Following prevalent mercantilist doctrine, the British government instructed colonial governors "to discourage all manufactures and give accurate accounts of any indications of the same."³ Although a certain amount of manufacturing was tolerated in the homes and small shops of the colonists, the British guarded two industries, wool and iron, with jealous care. While the manufacture of pig iron was encouraged, and while homespun textiles were common, the processing of pig iron and the weaving of finer textiles were prohibited.

Until 1763, the colonies were not too seriously handicapped by the mercantilist restrictions of the British, partly because of the small amount and primitive nature of manufacturing in the colonies and partly because of the lax enforcement of mercantilist legislation. After 1763, the attempts to enforce restrictions on manufacturing were more rigorous and came in more severe conflict with the growing industries of the colonies.

During the Revolution itself, several of the states offered bounties to manufacturers of goods vital to the prosecution of the war. For example, in 1777 Massachusetts granted a bounty of £100 for the first thousand pounds of "good merchantable card wire" produced in any water mill in

² Leverett S. Lyon, Myron W. Watkins, and Victor Abramson, *Government and Economic Life*. Washington, D.C., Brookings Institution, 1939, Vol. I, Chap. XVIII, "Interpretation and Important New Developments," p. 483.

³ Harold A. Faulkner, *American Economic History*, 5th ed. New York, Appleton-Century-Crofts, 1948, p. 115.

her own territory from iron made in the American states; Connecticut, in 1775, offered a bounty of 1s 6d for each gunlock manufactured and 5s for each complete stand of arms to the number of 3,000; and Rhode Island, in 1777, provided a bounty of £60 per gross ton for "steel of the best quality or equal in goodness with good German steel made in the state during the next three years."⁴

The years 1783 to 1787, between the end of the Revolution and the signing of the Constitution, in 1787, were years of crisis in which the central government was not strong enough to encourage individual manufactures.

CONSTITUTIONAL PROVISIONS BENEFICIAL TO MANUFACTURE

The weakness of the central government to act adequately under the Articles of Confederation brought about widespread demand for an effective and strong central government. Chief backers of the new Constitution, which provided for such increased central powers, were the commercial, financial, creditor, and investing groups who were eager to safeguard and strengthen the rights of property. In opposition were the farmers, debtors, and the landed aristocracy.

The amended Constitution of 1789 had several provisions which proved to be beneficial to manufacturing and the growth of industry. Most such provisions are found in Article 1, Section 8, which empowered the Congress, among other things, to provide for the

. . . general Welfare of the United States . . . to regulate Commerce with foreign Nations, and among the several States . . . to establish Post Offices and Post Roads . . . and to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

Before entering upon the discussion of the specific ways in which the Federal government under the new Constitution helped small firms, it should be advisable to recall that the establishment of a strong Federal government was deemed a necessity and a real benefit to business. The framework of business—the protection of property, the enforcement of contracts, rules for bankruptcy, power to grant patents, and the law of corporations—was made and is taken now for granted as a part of our governmental structure. Beyond this general framework there are specific aids to business—tariffs, subsidies, land grants, information, etc.—in which governmental agencies are fulfilling their tasks.

⁴ *Ibid.*, pp. 141, 142.

George Washington himself stated in his first annual address to the Congress, on Jan. 8, 1790, "The safety and interest [of a free people] require, that they should promote such manufactories, as tend to render them independent on others for essential, particularly for military supplies."⁵

FIRST ACTUAL MEASURES TO AID MANUFACTURE

The most famous American state paper to advocate active support of manufactures by the government was certainly Alexander Hamilton's *Report on Manufactures*, dated Dec. 5, 1791. His arguments in favor of encouragement of manufactures have been drawn upon by advocates of protective tariffs ever since. In this report he demonstrated how the development of manufacturing would benefit the whole nation, including agriculture. Manufacturing, he argued, would increase national wealth, provide employment, stimulate immigration from foreign countries, multiply the objects of enterprise, encourage the natural aptitude of the American people for mechanical arts, and foster the genius of invention. To encourage manufacturing, Hamilton favored a system of premiums and bounties for new enterprises, but this scheme was passed over because of the large expenditures involved. Instead, only a part of his proposals—those for mild customs duties—was adopted by the early Congresses.

The tariff has been since then the most common device historically used by our government to aid manufactures of many kinds. Until 1816, tariffs were primarily for revenue and were only mildly protective. Beginning in 1816, with the so-called American System of protection, protectionist rates were increased in all acts through the Act of 1828. There was then a reduction in rates until 1860, followed by an increase which reached its peak in the Hawley-Smoot Tariff Act of 1930. While it is true that the "infant-industry" argument has often been advanced as one of the primary reasons for establishing a protective tariff, it is hardly demonstrable that small manufacturers have benefited any more from such tariffs than other groups whose products were protected. Hamilton's program in particular was not based on assisting small or weak industries as such but favored developing the prosperity of the entire business group which he identified with the prosperity of the nation. If the government dispensed privileges to business, he maintained, the resulting economic benefits would percolate to other groups and be diffused through the entire economy. Henry Clay's American System of protection provided a broader base than Hamilton's program, which had lacked widespread popular appeal, by offering also the promise

⁵ *Writings of Washington*, Bicentennial ed., Vol. 30, June 30, 1788, to Jan. 21, 1790. Washington, D.C., Government Printing Office, April, 1939.

of a sound banking system and protective tariffs for the businessmen and industrialists of the East, while at the same time offering a program of Federally sponsored internal improvements to attract farmers and businessmen in the West.

Besides helping certain businesses by the protective tariff, the government hastened the development of manufacturing and the economic growth of the country by assisting in the establishment and promotion of the various means of transportation: canals, railroads, and highways. From 1827 to 1866, the Federal government granted 6,340,339 acres of public lands in aid of canal building or river improvement, in addition to rights of way. There were also sizable state expenditures on waterway improvements. Railroad companies likewise, and to a far greater extent, received land grants, rights of way, loans, and other financial aids from Federal and state governments to assist in hastening the construction of railroads from coast to coast. All in all, it is estimated that railroad companies received about 183,000,000 acres in Federal and state land grants, and financial assistance to secure construction of the railroads (including these land grants) totaling \$1,282,000,000.

This assistance to the different types of carriers of the nation was, like the tariff, not designed to aid small plants specifically but was granted in the conviction that the nation as a whole would benefit. At that time all plants were small. Manufacturing was, of course, stimulated by the increased transportation network which made available a more extended market and raw materials at lower cost.

BEGINNINGS OF INDUSTRIALIZATION AND ANTITRUST LAWS

The Civil War provided, in the North, the greatest impetus to manufacturing which the nation had thus far experienced, particularly in woolens, leather, machinery, and implements of war. It was the decade of the 1860's which may be considered the beginning of the rise of big business firms in America. Until 1860, the typical businessman was a merchant or banker rather than an industrialist. Articles were generally fabricated by small independent producers and purchased by merchants or commission men who moved them into channels of commerce. Sometimes the merchant supplied the material, equipment, or credit and thus extended his control over the productive process. The modern factory system with its powerful machinery, standardized products, rationalization of operations, and wage labor was just beginning to make its appearance.

With increases in size following the Civil War came increased concen-

tration of control in many industries. Pools, trusts, and other devices were used to increase the monopoly power of large firms in key industries. It was at this time that the first widespread feeling arose against large companies. Heretofore there had been a definite feeling against business as a whole by agricultural interests, of the agricultural West against the industrial East, but there was not the feeling that large industries exploited or jeopardized small firms. The resentment of small businesses and farmers was first directed against the railroads which had been granting substantial rebates to such large companies, giving them a considerable competitive advantage. This led to a series of state measures directed against the railroads and then to the passage of the *Federal Interstate Commerce Act* of 1887. Similarly, there were state measures directed against the trusts, followed by the famous *Sherman Antitrust Act* of 1890. While these acts had the avowed purpose of preventing large corporations from exercising undue competitive advantages over smaller companies, the movement toward greater concentration was by no means checked.

The Sherman Antitrust Act, the *Clayton Act* of 1914, and other anti-monopoly legislation have been the subject of vast amounts of judicial interpretation and litigation. In few cases, however, was the concentration of industry seriously retarded as a result of judicial decision. In the first important case of the Sherman Act before the Supreme Court, *United States v. E. C. Knight Company* (156 U.S. 1), the court decided that there was no proof that the American Sugar Refining Company had any intention to put a restraint upon trade or commerce, despite the fact that it had acquired control of 98 per cent of the sugar-refining capacity of the country. In the Standard Oil case in 1911 (221 U.S. 1), the Supreme Court established the so-called "rule of reason," whereby the Sherman Act was interpreted to prohibit only such combinations and monopolies as were in *unreasonable* restraint of trade. This interpretation made prosecution under the Sherman Act very difficult. By 1911, the Sherman Act was applied successfully only against two typical trusts, *Standard Oil* and *American Tobacco*.

After 1911, interpretations of the Sherman Act diverged along two fairly distinct paths. In the field of pools, trade associations, and other loose agreements among competitors, the Act continued to be applied with considerable vigor. On the other hand, in the field of close consolidations—the type of economic enterprise against which the law was originally directed—Sherman Act interpretation evolved in far more lenient manner. Since 1911 there have been only three cases involving close industrial consolidations appealed to the Supreme Court under the Sherman Act and five under Section 7 of the Clayton Act, which prevented intercorporate stock acquisition where such acquisition would substantially lessen competition. In all

but one of these eight cases, the government has been unsuccessful.⁶ There has long been a movement, also thus far unsuccessful, to extend the provisions of Section 7 of the Clayton Act to the purchase of *assets* of companies, as well as to acquisition of stock.

The effectiveness of the Sherman Act, after having been so drastically curtailed by these various court decisions, particularly in *Shoe Machinery*, *Steel*, and *International Harvester* decisions, was somewhat restored in the case *United States v. Aluminum Company of America*, of 1945 [148 F. 2d 416; C. C. A.2d]. In the decision in that case, Judge Learned Hand pointed out that:

. . . all contracts fixing prices are unconditionally prohibited, the only possible difference between them and a monopoly is that while a monopoly necessarily involves an equal, or even greater, power to fix prices, its mere existence might be thought not to constitute an exercise of that power. That distinction is nevertheless purely formal; it would be valid only so long as the monopoly remained wholly inert; it would disappear as soon as the monopoly began to operate. . . . Thereafter the power and its exercise must needs coalesce. Indeed it would be absurd to condemn such contracts unconditionally, and not to extend the condemnation to monopolies; for the contracts are only steps toward that entire control which monopoly confers: they are really partial monopolies . . . there can be no doubt that the vice of restrictive contracts and of monopoly is really one, it is the denial to commerce of the supposed protection of competition.

FAIR-TRADE LEGISLATION

While the antitrust legislation and court decisions were the most obvious means by which the Federal government showed its interest in small plants in the decades before World War I, there was a growing demand for further action to protect businessmen and consumers from unfair trade practices. This demand came not in the interests of small business as such but was directed against what came to be considered as unfair practices by businesses regardless of size. Where certain discriminatory practices were outlawed, however, small businessmen and plants were among the beneficiaries.

The *Federal Trade Commission*, established in 1914 by the act of the same name, was "created to stand among the welter of special interests as a firm and unbiased protagonist of the true general welfare."⁷ It was the responsibility of the five Federal Trade Commissioners to order persons, partnerships, or corporations engaged in unfair methods of competition in commerce to "cease and desist" after formal complaint, notice, and hearing. In 1938, by the *Wheeler-Lea Amendment*, the illegality of "unfair methods

⁶ Merle Fainsod and Lincoln Gordon, *Government and the American Economy*, rev. ed., New York, W. W. Norton & Company, 1948, p. 464.

⁷ *Ibid.*, p. 486.

of competition in commerce" was expanded to include as well "unfair or deceptive acts or practices in commerce." Violation now entails a civil penalty of up to \$5,000.

Among the unfair trade practices which the Federal Trade Commission was called upon to enforce were the four specific prohibitions of the Clayton Act: (1) *price discrimination* among purchasers where the effect "may be to substantially lessen competition or tend to create a monopoly in any line of commerce," except for discrimination on account of differences in grade, quality, or quantity or making due allowance for selling or transportation costs or "in good faith to meet competition"; (2) *tying contracts and exclusive dealing arrangements* or price concessions to the same effect, likewise where the effect "may be to substantially lessen competition or tend to create a monopoly in any line of commerce"; (3) *intercorporate stock acquisitions*, except among railroads, where the effect "may be to substantially lessen competition" between the corporations concerned or tend to create a monopoly of any line of commerce; and (4) *interlocking directorates among banks* with over \$5 million capital or among competing industrial corporations with over \$1 million capital.

In practice, as a result of court decisions and Federal Trade Commission decrees, these prohibitions generally proved unenforceable. In 1926 the Supreme Court made clear that direct violation of the law through acquisition of stock control in a leading competitor would be enjoined, but if the defendants had used their illegally acquired controlling interest to effect a merger of physical assets prior to the suit, the law provided no remedy.⁸ Similarly, the provision of the Clayton Act outlawing interlocking directorates is so open to evasion through the use of dummy directors that it cannot be considered to be of real importance.

The success of the Federal Trade Commission has depended on three major factors: (1) commission personnel and policy, (2) Congressional support, and (3) judicial cooperation in interpreting the law and in limiting the scope of judicial review so as to leave to the Commission substantial discretion in applying and developing the new standard. Some scholars have contended that "the history of the Federal Trade Commission has been characterized by long periods of weakness in policy, internal dissension, Congressional hostility, and narrow constriction of its legal authority by the courts. . . . A quarter century's experience with the 1914 statute has left its original purposes almost wholly unaccomplished."⁹ The area in which the Commission appears to have had more success is in the field of false advertising and misbranding, where policy is relatively simple and least controversial.

⁸ 272 U.S. 554 (1926).

⁹ Fainsod and Gordon, *op. cit.*, pp. 500, 501.

From this discussion, it is evident that concentration of economic power was not effectively curtailed by antitrust and fair-trade legislation, even though small business interests were among the most important backers of such legislation. During the 1920's, there was relatively less concern about small businesses, in part because they shared in the widespread prosperity of the decade and in part because the monopolistic practices of large corporations had become less and less crude. It was becoming increasingly common for large manufacturers, wholesale and even retail outlets to be supplied by many small manufacturers and on the other hand for many small retailers to rely heavily on the brand merchandise manufactured by large nationally known corporations.

The difference in interests between the small manufacturer and the small retailer which has become increasingly common is well expressed by A. D. H. Kaplan as follows:

The independent retailer, limited in the stock he can carry, naturally gives precedence to standard brands on which the consumer has already been sold by national manufacturer advertising and for which the consumer ordinarily asks by brand name. For the small manufacturer and wholesaler to edge in with an item that must be merchandised by the retailer in competition with already accepted national brands is often next to impossible. . . . This inability to deal effectively with the small retailer plays the small manufacturer into the hands of the large retailer, whether chain or department store. . . . The small retailer, having experienced the price-cutting tactics of the large distributor of the familiar national brands, has aligned himself under fair-trade legislation with the large manufacturer of the national brand—indeed, small retailers have frequently put the pressure on the manufacturer to “fair-trade” his product. To the large retailer is left the aggressive merchandising of the output of small manufacturers.¹⁰

It was the depression initiated by the stock-market crash of 1929 that caused the government to pass further legislation which would protect small businessmen from unfair competition. The depression demonstrated the vulnerability of small businesses to the competitive tactics which some corporations having sizable financial resources were able to employ.

LAWS PROTECTING SMALL ENTERPRISES FROM UNFAIR COMPETITION

The first Federal legislation which provided substantial modification of American antitrust policy was the National Industrial Recovery Act of 1933.

¹⁰ A. D. H. Kaplan, *Small Business: Its Place and Problems*. New York, McGraw-Hill Book Company, Inc., 1948, pp. 188-189.

It linked together the development of trade association policy and the regulation of competitive methods, by turning over to the associations themselves a large share of responsibility for redefining unfair competition. It permitted them a latitude far beyond any previous conception of "unfair methods of competition." It was, essentially, an experiment in industrial self-government, subject to a mild degree of governmental supervision and to more important limitations in the form of minimum labor standards and protection for labor self-organization, exacted in return for the new liberty of association.¹¹

The objectives of the NIRA were to be achieved through codes of fair competition established by industrial groups or associations and approved by the President. This, of course, amounted to a relaxation of antitrust laws. The NIRA was made law by Congress with the backing of a substantial number of small businessmen who attributed their troubles primarily to competitors' sales below cost. However, in actual operation, it aroused much opposition and criticism. Small businessmen considered themselves to be discriminated against in the composition of code authorities. And they were less well equipped than their larger competitors to absorb the increased costs of the labor provisions. When open-price systems, under which trade associations made prices within the industry available to all members of the industry, prevented them from competing on a price basis, the small producers were unable to offer as effective nonprice inducements to consumers.

When the NIRA was declared unconstitutional in May, 1935, by the Supreme Court,¹² the movement to salvage the parts which had proved useful was immediately undertaken. The *National Labor Relations Act*, the *Robinson-Patman Act*, and the *Miller-Tydings Act* all were based in part on the codes of the NIRA. The last two were favored by certain small business interests and require specific mention.

The Robinson-Patman Act was directed against chain stores and other large-scale distributors. It took the form of an amendment to Section 2 of the Clayton Act, which prohibited certain kinds of price discrimination. It imposed restrictions on brokerage payments, advertising allowances, and selling aids to prevent alleged price discrimination in favor of these larger outlets. The law also permitted the Federal Trade Commission to establish limits to quantity discounts without regard to differences in costs. Manufacturers, large and small, took an equivocal position toward the bill while it was under debate, for they desired relief from the bargaining power of large buyers without sacrificing the very valuable marketing channels. Thus they favored the bill with substantial modifications and are believed to have

¹¹ Fainsod and Gordon, *op. cit.*, p. 571.

¹² 295 U.S. 495 (1935).

gained more than any other single group. In their study *Government and the American Economy*, Fainsod and Gordon conclude:

The total benefits to independent distributors under the Robinson-Patman Act have been relatively small. Manufacturers, particularly in the food industry, appear to have been more fortunate, for the Act has given them an opportunity to resist the demands of large buyers for special brokerage and advertising allowances. Under these conditions the fight against mass distribution has been pursued with a vigor along other lines.¹³

The Miller-Tydings Act, technically an amendment to the Sherman Act, was the attempt to put into Federal law the same provisions legalizing resale-price maintenance that all but three states and the District of Columbia have permitted under their own so-called fair-trade acts. Resale-price-maintenance laws permit manufacturers to set the minimum price at which wholesalers and retailers may sell goods carrying their brand names. Their chief proponents have been manufacturers; dealers in drugs, cosmetics, and liquors; and book publishers.

The almost nation-wide approval of resale-price maintenance by state legislation still left commodities dealt with in interstate commerce subject to the existing limitations of Federal antitrust laws. The Miller-Tydings Act, passed in 1937, filled this gap. It provided that commodities protected by fair-trade legislation in intrastate commerce may legally maintain the fair-trade prices in their interstate commerce to and from the fair-trade states. Agitation for these fair-trade laws to assure retail-price maintenance came in large measure from small retailers whose competitive position suffered by the practice of chain and other large retail outlets of selling well-known brand items at cut-rate prices that the smaller retailer could not match.

While most of this antitrust and fair-trade legislation was undoubtedly passed in the interest of small business or some segments of small business, taken as a whole it has been developed in such piecemeal fashion over so many decades and has been modified by such a great number of court decisions that it has proved difficult to administer. It is also impossible to determine to what extent small manufacturers and dealers have actually benefited from it. As A. D. H. Kaplan suggests:

It is essential that Federal legislation relating to competition and restraints of trade—the Sherman Antitrust Act, the Clayton Act with its Miller-Tydings and Robinson-Patman amendments, and the FTC Act, along with subsidiary pieces of legislation—be reexamined and recast into a consistent body of legislation.

¹³ Fainsod and Gordon, *op. cit.*, p. 602.

The Congress must endeavor to lay down the governing principles and at least the broad definitions that can reasonably be applied to the economic organization of our time—by business and by the administrative agencies as well as by the courts.¹⁴

This need was made clear, for example, by the intensive investigations of the *Temporary National Economic Committee*, which was created by the Congress in 1938 and which issued its final report in 1941. This committee investigated the extent and consequences of the concentration of economic power; this concentration was believed to have been a basic factor in the economic recession of 1937–1938. It supplied a great deal of information on competition and monopoly in relation to small business. It called attention to the various practices that bring about concentration of power in the market: restrictive contracts, price fixing, antichain legislation, coercion through patent controls, interstate trade barriers and licensing to bar entry, and other practices that tend to destroy competition.

However, no specific legislation resulted from its final report, in part because it was issued just at the eve of American entry into World War II. The voluminous hearings and monographs published by the committee contain an array of material which will prove most valuable in the formulation of future laws.

Governmental interest in small business since 1933 has not been limited to the measures considered above. According to a compilation of the Department of Commerce,¹⁵ in the years from 1933 to 1944, the Congress has considered 577 proposed measures designed to assist small business. Of these 577 bills, 131 dealt with financial assistance, 125 with regulation of monopolies and unfair competition, and 75 with a variety of types of research under sponsorship of the government. The remaining 246 bills were in many different categories, such as special war relief measures, wage and hour exemptions, simplification of government forms, contract termination, and surplus property. Not included were agricultural measures or others which did not bear directly on small business, even though small business might be vitally affected by them.

In addition to the laws discussed above, the most important of the pre-war measures were probably the amendments to the Federal Reserve Act and the Reconstruction Finance Corporation Act liberalizing the extension of credit to small business.

¹⁴ A. D. H. Kaplan, *op. cit.*, p. 245.

¹⁵ "390 Bills" 1933–1942) and "187 Bills" (1943–1944) (two digests of proposals considered in Congress in behalf of small business). Washington, D.C., Government Printing Office, 1943 (20 cents) and 1946 (25 cents).

ASSISTANCE TO SMALL PLANTS
IN WORLD WAR II

Even more direct assistance to small plants was initiated with the approach of World War II. The impetus for this assistance was twofold: (1) Small plants were finding it increasingly difficult to get necessary materials and labor for producing civilian goods and were severely handicapped in obtaining war contracts, particularly at the outset of the war; (2) as the need for war materials grew, the small plants assumed a very important role in adding to the capacity of war production and enabled the nation to obtain greater total output of essential production than would have been possible if war contracts had been limited to the larger companies.

Beginning in 1940, when the *Senate Small Business Committee* was created as the result of the passage of Senate Resolution 298 (1940), the problems of small enterprises have been the subject of continuous Congressional study. The following year witnessed the birth of the *House Small Business Committee* as a result of the passage of House Resolution 294. Since their organization, both committees have conducted comprehensive programs designed to preserve and strengthen small business. The activities of these committees were instrumental in securing effective participation of smaller enterprises in the war effort by means of sponsored legislation, numerous hearings, and widespread publicity.

Both committees have held numerous hearings and have issued many reports dealing with a wide variety of subjects. Several typical problems of small business which have been investigated by these committees are indicated by the following titles: *Monopolistic and Unfair Trade Practices*, Hearings before Subcommittee No. 1 of the Select Committee on Small Business, House of Representatives, 1949; *Participation of Small Business in Government Procurement*, Senate Report No. 45; *Small Business Finance and Taxation*, Senate Report No. 46; and *Record Keeping for Small Stores*, Senate Committee Print No. 2.

Among the acts that were passed under the sponsorship of or with the approval of the Congressional committees on small business, perhaps the most significant one during the war was the act of June 11, 1942, which established the *Smaller War Plants Corporation* in the War Production Board. This act was intended to ensure that small business concerns were "efficiently and effectively utilized in the production of articles, equipment, supplies, and materials for both war and essential civilian purposes." Under the terms of the act, the Smaller War Plants Corporation was empowered to make loans to small plants for working capital; for plant construction,

expansion, or conversion; and for purchases of needed equipment and supplies; to lease or sell machinery and equipment to small plants; and to help small plants obtain contracts from government procurement agencies or prime contractors. Subsequently it was directed to assume additional duties to assist small business in contract settlement and purchase of government surplus property and to give preferential consideration to veterans in acquisition of surplus property and in the guarantee of loans to those setting up their own small businesses.

The Smaller War Plants Corporation was abolished in January, 1946, and its functions transferred to the *Reconstruction Finance Corporation* and the *Department of Commerce* with its lending functions going to the RFC. During the three and a half years of its existence, the Smaller War Plants Corporation authorized loans and leases to small plants amounting to more than \$500 million and helped small plants obtain nearly 60,000 prime contracts with a total value of nearly \$6 billion.

Another of the acts sponsored by the Small Business Committees of the House and Senate during the war was the *Federal Reports Act* of 1942, which established a method for integrating information in the hands of Federal agencies and reducing the requests of Federal agencies addressed to small businesses for information to the minimum absolutely necessary for their operations. The effect of this legislation was to keep hundreds of requests from being sent to businessmen which would have required considerable expense to prepare.

LEGISLATION FAVORABLE TO SMALL COMPANIES SINCE 1945

Since the end of World War II, a number of other important pieces of legislation have been passed in the interest of small businessmen.

The *Tax Adjustment Act of 1945* (77th Congress) reduced or eliminated the excess-profits tax and provided a means for assisting the financing of re-conversion through making a 10 per cent excess-profits-tax credit available immediately instead of as a postwar measure.

The *Revenue Act of 1945* furthered this objective by repealing the excess-profits tax entirely for the years beginning after Dec. 31, 1945, reducing the corporate surtax rates and reducing the tax rates on individuals.

House Resolution 1336, 80th Congress, the *Armed Services Procurement Act of 1947*, stated that it was the declared policy of Congress that a fair proportion of the total purchases and contracts for supplies and services for the government should be placed with small business concerns.

Senate Resolution 2655, Selective Service Act of 1948, stated that small business should be granted a fair share of the orders placed exclusively for the use of the armed forces or for other Federal agencies and defined a small business as being one which was not dominant in its field, was independently owned and operated, and had fewer than 500 employees.

Senate Concurrent Resolution 14, 80th Congress, was an important statement of policy in that the Congress formally recognized the valid claim of small businessmen of America to equal representation as an entity with labor, agriculture, or other groups and urged the President, members of the Cabinet, and other officers of the government to afford small businessmen representation on policy-making boards.

The *Revenue Act of 1948* provided important measures of tax relief to unincorporated small businesses through the adoption of community property provisions and through a reduction in rates. One important result of this Act has been to remove a large proportion of disputed family-partnership cases from the area of argument.

However, this governmental concern and interest is not in small business as a special-interest group—it is in the preservation of business as such. There is no quarrel between small business and big business; they are interdependent. There is no harm in big business as such; it is only when big-business results in the tremendous concentration of economic power that competition is stifled. The very existence of the capitalistic free-enterprise system through which this country has grown and prospered over the years is dependent on competition. In order to preserve an economy based on the competitive idea, it is obvious that there must be a number of competitors. Hence, the necessity for preserving the interest of all business concerns, the vast majority of which must necessarily be small.

In the interest of national security in time of an emergency, again safety lies in numbers. In the early stages of World War II most of the contracts for war-supply needs for the country were placed with a small number of large concerns with resultant bottlenecks and delays in delivery which proved disastrous. This resulted in the passage of Public Law 603 establishing the Smaller War Plants Corporation. This law provided for a more widespread utilization of the industrial capacity of the nation, both large and small. However, the very large concerns became so firmly entrenched because of their favored position during the war that, with the repeal of this statute and the withdrawal of this positive support, the smaller plants of the country after the war are in a more precarious position than they were before World War II. As stated before, legislative efforts which have been made to improve this situation have unhappily proved to be quite ineffectual.

INFORMATION AND GOVERNMENT SERVICES AVAILABLE TO THE SMALL PLANT

The greatest need today of *the small plant operator is to perfect himself in his knowledge and application of the most efficient methods of operation of all phases of his business.* In this effort government, both Federal and state, is in a capacity to render a very distinct service through providing information on tried and proved business practices, which, if used, will improve the competitive position of the smaller operator.

The effects of taxation, difficulty in obtaining equity capital on a long-term basis, and the control of monopolistic practices remain problems of legislation which the Federal government must meet and correct. But the efficient use of the best management and operating know-how available will help small businessmen to remain in a competitive position until such time as effective legislative action can be developed.

The small plant operator should make himself thoroughly familiar with all the services available to him. These services are designed to assist him to make wiser decisions through an improved knowledge of efficient business techniques.

The Antitrust Division of the U.S. Department of Justice maintains a small business section for the specific purpose of investigation and correction of claims of trust violations against smaller businessmen.

The Federal Trade Commission stands ready to investigate and correct situations involving unfair trade practices covered by the various acts which it administers.

The Reconstruction Finance Corporation operates a loan function directed to aid small business.

The Department of Commerce is charged by law with the responsibility "to foster, promote, and develop the various manufacturing industries of the United States and markets for the same at home and abroad. . . ." It is the businessman's home in government.

SERVICES OF THE SMALL BUSINESS DIVISION

The Small Business Division of the Department of Commerce is directed to operate as the focal point "through which all services of the Department and other groups cooperating with the Department in this activity are directed to the needs of the . . . small business establishments of the nation." As a first step, taken in collaboration with the U.S. Armed Forces

Institute and with the cooperation of the Veterans Administration, the Department developed 18 publications¹⁶ describing the best known practices for establishing and operating as many kinds of business. This series has now been increased to 44 titles, of which over one million copies have been sold to date.

Part of the activities of the Division are directed toward discovering the best possible management *know-how information* and placing it in the hands of the smaller operators. In the study on the special problems of small business made by the Committee for Economic Development, management know-how was indicated as the first problem of small business. The information and assistance available through this source is authentic, and the small plant operator should make the greatest use of it.

Such information is released through the 42 *field offices* of the Department usually as *Small Business Aids*, about 500 of which have been published to date. While some of these *Aids* concern general management problems, others are concerned with specific functions and particular kinds of business. Their average length is 1,500 words.

The Division also maintains an *active program on government procurement*. At the present time, the Federal government buys upward of a billion dollars' worth of merchandise and services every month. It is important that small manufacturers know how and under what circumstances to bid. Each field office of the Department maintains a *Government Procurement Manual* showing for each procuring agency of the government what it buys, where the purchasing is done, and under what circumstances.

It is even more important that the offers to bid are written and timed so that small firms can bid successfully. The Department of Commerce has entered into agreements with the government procurement agencies in Washington which provide that these agencies will

1. Revise procurement-item specifications from time to time and minimize discrimination and obsolete requirements
2. Make a widespread geographic distribution of bids
3. Divide procurement awards among as many companies as is practical
4. Provide subcontracting opportunities
5. Establish adequate contract-negotiation procedures
6. Recognize distressed conditions of business within geographic areas and operation below minimum economic level.

The *Extension Service* of the Small Business Division is directing its efforts, in cooperation with university schools of business administration, toward the establishment of courses in small-business operation at the uni-

¹⁶ See Bibliography.

versity level and through conferences of businessmen held by the universities. Cooperation with engineering schools is also part of this program.

Proved *solutions for many technical and production problems*, information as to *patents available for license* and as to the thousands of captured *German patents*, best *production techniques*, all these are available for the asking. A small businessman, therefore, should not overlook the great variety of valuable business services available from his Federal government.

Below is a list of the field offices of the U.S. Department of Commerce.

Albuquerque, N.M., Hanosh Building
Atlanta 1, Ga., P. O. Box 1595
Baltimore 2, Md., U.S. Appraisers' Stores Building
Boston 9, Mass., Customhouse
Buffalo 3, N.Y., Federal Building
Butte, Mont., O'Rourke Estate Building
Charleston 3, S.C., Peoples Building
Cheyenne, Wyo., Federal Office Building
Chicago 4, Ill., McCormick Building
Cincinnati 2, Ohio, Federal Reserve Bank Building
Cleveland 14, Ohio, Union Commerce Building
Dallas 2, Tex., 1114 Commerce Street
Denver 2, Colo., Boston Building
Detroit 26, Mich., New Federal Building
El Paso 7, Tex., 206 U.S. Courthouse Building
Hartford 1, Conn., Post Office Building
Houston 14, Tex., Federal Office Building
Jacksonville 1, Fla., Federal Building
Kansas City 6, Mo., Fidelity Building
Los Angeles 12, Calif., U.S. Post Office and Court House
Louisville, 2, Ky., Federal Building
Memphis 3, Tenn., Federal Building
Miami 32, Fla., Seybold Building
Milwaukee 1, Wis., Federal Building
Minneapolis 1, Minn., Midland Bank Building
Mobile 10, Ala., Federal Building
New Orleans 12, La., Masonic Temple Building
New York 4, N.Y., 42 Broadway
Oklahoma City 2, Okla., Council Building
Omaha 2, Neb., W. O. W. Building
Philadelphia 6, Pa., 812 Lafayette Building
Phoenix 8, Ariz., Security Building
Pittsburgh 19, Pa., New Federal Building

Portland 4, Ore., Old U.S. Court House
Providence 3, R.I., Customhouse
Reno, Nev., Cladianos Building
Richmond 19, Va., 801 East Broad Street
St. Louis 1, Mo., New Federal Building
Salt Lake City 1, Utah, Post Office Building
San Francisco 11, Calif., Customhouse
Savannah, Ga., U.S. Court House and Post Office Building
Seattle 4, Wash., Federal Office Building.

SERVICES AVAILABLE FROM STATE GOVERNMENTS AND LOCAL AUTHORITIES

In addition, several state governments have interested themselves in the problems of small business. *State departments of commerce* have taken an active part in developing assistance programs for the preservation of the free competitive system. In some states there are small business commissions established primarily for that purpose. In October, 1948, the Small Business Division of the Department of Commerce proposed suggested legislation for the further establishment of such small business commissions by the states. The Council of State Governments approved this proposal, and the suggested legislation has been submitted to all states for their consideration. In 47 states there are state industrial commissions which are offering information and assistance on industrial matters.

Below is a list of state industrial commissions:

Alabama State Planning Board, Montgomery 4, Ala.
Arkansas Resources and Development Commission, Little Rock, Ark.
California Division of Planning and Economic Research, Sacramento 14, Calif.
Colorado State Planning Commission, Denver 2, Colo.
Connecticut Development Commission, Hartford, Conn.
Delaware Post-War Planning Commission, Farnhurst, Del.
Florida State Improvement Commission, Tallahassee, Fla.
Georgia State Department of Commerce, Atlanta, Ga.
Idaho State Planning Board, Boise, Idaho
Illinois Post-War Planning Commission, Springfield, Ill.
Indiana Economic Council, Indianapolis 4, Ind.
Iowa Development Commission, Des Moines 9, Iowa
Kansas Industrial Development Commission, Topeka, Kans.
Kentucky Agricultural and Development Board, Frankfort, Ky.
Louisiana Department of Commerce and Industry, Baton Rouge 4, La.
Maine Development Commission, Augusta, Me.

Maryland State Planning Commission, Baltimore 2, Md.
Massachusetts State Planning Board, Boston, Mass.
Michigan Department of Economic Development, Lansing 15, Mich.
Minnesota Department of Business Research and Development, St. Paul 1, Minn.
Mississippi Agricultural and Industrial Board, Jackson, Miss.
Missouri State Division of Resources and Development, Jefferson City, Mo.
Montana Industrial Development Division, Helena, Mont.
Division of Nebraska Resources, Lincoln 9, Neb.
Nevada State Planning Board, Carson City, Nev.
New Hampshire State Planning and Development Commission, Concord, N. H.
New Jersey Department of Economic Development, Trenton 7, N.J.
New Mexico State Planning Board, Santa Fe, N.M.
New York Department of Commerce, Albany 7, N.Y.
North Carolina Department of Conservation and Development, Raleigh, N.C.
North Dakota Research Foundation, Bismarck, N.D.
Ohio Development and Publicity Commission, Columbus 15, Ohio
Oklahoma Planning and Resources Board, Oklahoma City 5, Okla.
Oregon Committee on Post-War Readjustment and Development, Salem, Ore.
Pennsylvania State Planning Board, Harrisburg, Pa.
Rhode Island State Planning Board, Providence, R.I.
South Carolina Research, Planning and Development Board, Columbia, S.C.
South Dakota Natural Resources Commission, Pierre, S.D.
Tennessee State Planning Commission, Nashville 3, Tenn.
Texas Post-War Economic Planning Commission, Austin 1, Tex.
Utah Department of Publicity and Industrial Development, Salt Lake City, Utah
State of Vermont Development Commission, Montpelier, Vt.
Virginia Division of Planning and Economic Development, Richmond, Va.
Washington Division of Progress and Industry Development, Olympia, Wash.
West Virginia State Planning Board, Morgantown, W.Va.
Wisconsin State Planning Board, Madison 2, Wis.
Wyoming Commerce and Industry Commission, Cheyenne, Wyo.

All are concerned with the improvement of industry within the state, and the information and assistance available from such state bodies, too, should be fully utilized.

In many localities, local *chambers of commerce* have made special efforts to promote the interest of the small manufacturers of their community. A survey titled *An Analysis of Industrial Foundations*, recently published by the Tulsa, Okla., Chamber of Commerce, lists 70 industrial foundations which have been formed by communities for the specific purpose of promoting small industries in their locality. This activity is pointed largely toward the problem of capital availability.

SUMMATION

In summation it is apparent that the trend of all efforts of government to assist the small manufacturer is not toward subsidy but rather toward rendering all manner of services which will *help him to help himself* become a more efficient businessman. Given the opportunity to compete on a fair and equitable basis, the smaller manufacturers of America have sufficient ingenuity and ability to meet their problems head on and overcome them. All the efforts of government and its interest in the small plant operator are centered on that thought—the preservation of equality of opportunity.

Good management is the best means toward this end.

PART TWO
MANAGEMENT TASKS

*This part discusses
the fundamentals of
know-how and its
procedures in detail*

"The principal object of management should be to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee.

The words 'maximum prosperity' are used, in their broad sense, to mean not only large dividends for the company or owner, but the development of every branch of the business to its highest state of excellence, so that the prosperity may be permanent."

FREDERICK WINSLOW TAYLOR

The Principles of Scientific Management, p. 9.

OLD AND NEW CONCEPTS OF MANAGEMENT

PREPARED BY THE EDITOR

Management is a series of thinking processes and of actions whereby the manager aims to make definite products or to render services in a definite way, in a definite volume, at a definite time, at a price at which they can be sold, and at a cost which leaves a profit to the enterprise. It is the main task of the manager to apply such thinking and actions as would fulfill these objectives.

During the entire Middle Ages only rules of thumb, common sense, and personal experience were applied by the managers in directing the workers and in arranging the work which transformed materials into useful products. Only in the last decades of the last century, when goods had to be made in large quantities, use of machines became more common, more workers were needed, and competition began to make itself felt in many manufactures, did plant owners and managers begin to feel that some specific kind of thinking and systematic acting were needed in order to achieve all of the objectives toward turning out products as described.

During the golden nineties of the last century, demands for nearly all products exceeded anything known before, but the workers were neither too skilled nor too willing to make the better qualities and increased quantities that were needed; also most foremen were none too successful in seeing more work through the mills and shops. The larger companies simply could no longer apply the easygoing ways of letting the foremen alone arrange their production as had been practiced in past decades.

How to operate better, how to get more work done by the worker, how to deal with the individual, how to pay stimulating wages, how to arrange for a better work flow, how to obtain less spoilage of workpieces, and how to organize growing and large shops in their entirety were the key problems of those days.

THE PRINCIPLES OF SCIENTIFIC MANAGEMENT

Frederick Winslow Taylor: Many minds at the turn of the century were occupied with these problems, but the first to develop carefully considered and systematic improvements for shop management was Frederick Winslow

Taylor,¹ who, in 1895, recommended time study for each job, in order to obtain a definite and fair standard of time in which any worker should accomplish each operation. He also recommended use of these time standards to prevent loafing and, to obtain more work from the workers, he proposed to pay them incentive wages if their output exceeded the standard.

In 1903, as a member of the American Society of Mechanical Engineers, he published in the *Transactions*² of the Society a treatise on "Shop Management," where he recommended the use of a planning department to obtain better work flow, specialized or functional foremen, method studies to improve the tools to be used and the techniques for performing certain types of work, establishment of definite managerial authorities and responsibilities, and functionalized departments to better coordinate a larger flow of work.

Taylor,³ by these and other suggestions contained in his second book on *Scientific Management*, published in 1912, founded scientific management as a new kind of science. Essentially, he concerned himself with and limited the scope of this new science to the improvement of shop working conditions and of the individual workers and of foremen; to better work methods and more effective wage-setting methods, which were the improvements most urgently needed and thought of at that time.

These limitations in the basic concept of management, of what it is and should cover, have unfortunately influenced the science of management for many decades. Time study, wage-incentive systems, and a general desire for more systematic work performance within shops were widely accepted, elaborated upon, and gradually introduced in larger establishments and here and there also in small shops. His additional suggestions to use planning, functional specialist foremen, and many other ideas were not very widely accepted, because they were not considered as desirable or practical innovations.

Henry Laurence Gantt: Working at about the same time as Taylor as a consultant on management and labor problems and in some cases in association with Frederick W. Taylor installing incentive-wage systems, Gantt published quite a few articles, until in 1911 he brought out his first book: *Work, Wages, and Profits, Their Influence on the Cost of Living*.⁴

¹ Frederick Winslow Taylor, "A Piece Rate System." New York, American Society of Mechanical Engineers, *Transactions*, June, 1895.

² June, 1903.

³ Originally published in *Harper's American Magazine*, 1911. Harper also published the book.

⁴ Henry Laurence Gantt, *Work, Wages, and Profits*. New York, *The Engineering Magazine*, 1911. L. P. Alford, *Henry Laurence Gantt, Leader in Industry*. New York, Harper & Brothers, 1914.

Unlike others he did not stress the techniques of time study or motion study or any kind of incentive system. His contribution to scientific management was made in form of investigations covering the effects which various kinds of wages have on the worker, training of workers, prices and profits, and similar subjects of importance in improving work and shop management.

Also his second book on *Industrial Leadership*,⁵ dealt with training of workmen, principles of task work, results of task work, the interrelations of production and sales, and other subjects.

Organizing for Work,⁶ his third book, covered economic, political, and international subjects and was undoubtedly influenced by World War I, during which he was called upon to assist in supervising production in many arsenals and factories.

It was during the war that Gantt developed the kind of production-control charts for which he became famous. By means of these charts production was no longer scheduled in quantities alone as had been customary, but time was made the main scheduling factor, so that progress of work, machine operations, man performance, and future work load for any department or plant could be shown and the actual progress could be controlled. The first Gantt chart was published in *Industrial Management*, February, 1918.

A more comprehensive study and description of these charts was prepared by Wallace Clark, whose book, *The Gantt Chart, A Working Tool of Management*, was published by the Ronald Press Company in 1922.

Frank B. and Dr. Lillian Gilbreth: That management should take interest in the details of work techniques and should develop for every kind of work *the very best and most humane way* of doing it were the fundamental recommendations of these two outstanding pioneers.

They have upheld these fundamental principles in all their work, in their writings, and in all the scientific analyses and devices which they developed for the study and measuring of motions, aimed mainly to create methods of work free of waste and therefore better, less costly, and less painful to the workers.

The following books were only part of their literary contributions:

Motion Study. New York, D. Van Nostrand Company, Inc., 1911

Primer of Scientific Management. New York, D. Van Nostrand Company, Inc., 1912

The Psychology of Management. New York, The Macmillan Company, 1914

Fatigue Study. New York, The Macmillan Company, 1916

Applied Motion Study. New York, The Macmillan Company, 1917

⁵ New Haven, Yale University Press, 1916.

⁶ New York, Harcourt, Brace and Company, Inc., 1919.

Motion Study described for the first time to an astounded world how much more work could be produced in bricklaying or in any other kind of work by the careful study and improvement of the variable characteristics of the worker, the variables of the surroundings, and the variables of the motions.

The *Primer of Scientific Management* was written for doubting managers and labor leaders, who made opposition to work improvements, although they provenly benefited the management and the workers. The question-and-answer style in which this book is written shows not only the almost endless variety of doubts but also the difficulties which the pioneers of the new science had to overcome.

The Psychology of Management, written by Dr. Lillian Gilbreth, is rarely mentioned as contributory to her husband's investigations and work. Yet one can readily trace the findings of her study in *Fatigue Studies* and later publications. Avoidance of overfatigue, provisions for rest, improvement of shop and working conditions, fitting of men and jobs to each other are only some of the humane and practical recommendations made in these studies.

Applied Motion Study finally gave the details of motion-study techniques in systematic form. Quite definitely aligned to those principles of scientific management as were propounded in those early days, to time study, to the philosophy of stressing men and workers as individuals, whose every movement and motion should be studied, this book also describes the devices for motion study and many of the techniques which gradually have become real tools of management.

The work of the Gilbreths, as much as it has been claimed as part of "scientific" management, is so well founded in itself and its objectives that it will always be a fundamental, basic, and eminently useful part of any kind of management which has to deal with details of work.⁷

Harrington Emerson: Emerson glamorized the new science of management by his philosophical book *The Twelve Principles of Efficiency* (1911), in which he made quite a few suggestions to be observed in managing. Like Taylor he recommended the establishment of definite work standards or goals; he advocated strongly the necessity for arranging work on the basis of departmentalized authorities and functional responsibilities in order to obtain the best organization. He declared that management encompassed men, money, materials, machines, and methods, which would enable the organization to set and to achieve the desired work goals. Besides, he stressed the need for "leaders," managers, competent and forceful men, fit to set their own goals, direct the others, make them fulfill the task and respond to authority.

⁷ For further discussion see Chap. 7, p. 194.

He evolved also 12 "principles," five of which were intended to represent the *philosophic premises of management*: (1) clearly defined ideals, (2) common sense, (3) competent counsel to the worker, (4) discipline, (5) the fair deal; and seven others, meant to be the *basic tools or "mechanisms" of management*: (6) records and record keeping, (7) dispatching of work orders, (8) work-time standards and work-performance schedules, (9) standardized work conditions, (10) standardized operations, (11) written standard-practice instructions, (12) higher reward for higher than standard efficiency.

Quite a few of these suggestions show great similarity to those originated by Taylor. Nearly all were introduced widely and accepted by later writers as the indispensable and indisputably important principles and features of good management, although later authors expressed them in ever more "scientific" terms and in much more elaborate language.

Dexter S. Kimball: He was the first to add "scientific organizing" into the growing scope of scientific management by publication of his book on *Principles of Industrial Organization* (1913).

His principles were published at a time when industrialists organized many of the larger companies. Since he stressed the importance of the manager and the manager's influence, power, abilities, personality, and guidance and the need for his "administrative knowledge," his proposal to create an "administrative organization" which would be the basis and directing spirit of the industrial enterprise found wide acclaim and approval among those who were or aspired to be managers, administrators, and "executives."

Kimball's greatest contributions rest in his pointing out that good management not only should include the shop but should cover also other activities such as sales, accounting and financial operations, and in his stressing that organizing was a distinct phase of management which was to be added to the phase of operating, which so far had been given most, if not all, of the attention.

On the other hand, there were a few most serious oversights in this first concept of industrial organizing: It created and overstressed the administrative or executive organization to the almost definite exclusion and disregard of the workers, who were considered as only under contractual relationship to the enterprise and its organization. This method of organizing was convenient and was applied in most of the larger companies, but it also had most telling consequences, in so far as the workers began to turn more definitely to those organizations which worked for their interests and gave them a feeling of belonging. By now the workers' unions have become in many companies as strong as and possibly stronger than any of the administrative organizations created by management.

The second serious oversight in scientific organizing was that all facilities, machines, and other equipment which in combination do most of the work today were excluded from the fundamental organizing procedures and were placed under the individual authorities of the various executives. This simplified organizing, but it still more strengthened the concept that organizing was completed when it was applied to men. The managers organizing a management-man organization and the unions organizing a union-man organization have created and still are creating for each other an endless chain of troubles, conflicts, and serious disputes between the two totally different kinds of "man organizations" which began to grow within most of the larger companies.

L. P. Alford: After these earliest pioneers of scientific management had laid down the basic principles of operating and organizing as described, World War I offered ample and extensive opportunities to apply management, to create functionalized departments and administrative work, and to install executives of all ranks. They actually operated and organized as the advocates of scientific management recommended, on the basis of personalized authority which so greatly enhanced their personal importance and gave to the ever-growing group of executives a quite distinct character. With the great expansion of the physical volume of industrial activities, they introduced and added in shops and administrative offices ever more "mechanisms" of management; more records, tickets, procedures, routines and instructions; more elaborate techniques and policies on "administration."

By about 1921 the literature and new practices of "scientific management" had grown to such proportions and varieties that L. P. Alford, who had participated in the development of scientific management since its beginning, decided to bring out a complete survey of all concepts, principles, methods, and practices that had been evolved. He invited a number of authors to prepare special chapters covering their respective fields and published them as *Management's Handbook* in 1924 (New York, Ronald Press).

The book was the first complete and well-arranged presentation of the entire field of management. It definitely extended the scope from production into the fields of sales, accounting, cost accounting, budgeting, finance, labor, wages, systems, statistics, purchasing, and plant layout and above all into the techniques of management controls, which had been developed to keep the growing organizations and activities under proper management supervision and guidance. For the first time visualizations of different organization types and descriptions of functions, authorities, and responsibilities of managers and departments were brought before a wide public. The much improved techniques of time study, method study, machine-load charts, pro-

duction-control boards, and many other entirely new devices and mechanisms of management were described in detail.

Magazines and Other Publications: Technical magazines and periodicals which so far had covered only strictly technical subjects began in those years to report also on maintenance or other industrial engineering topics, and by and by they gave more space to management in its wider sense. Outstanding among these magazines were *Engineering Magazine* and *Factory and Industrial Management*. Both had been founded in 1882 and were consolidated as *Factory Management and Maintenance* in 1933. This magazine is considered by many as one of the very best in the indicated fields.

Management subjects have found acceptance also in all those technical or commercial journals serving specific industries or professions, and entirely new types of publications were developed such as *Business Week*, which since 1929 covers pertinent current events, trends, personalities, and special developments of interest to managers. There came into being literally hundreds of other magazines too numerous to mention.

Of greatest value to the small plant manager have become those which in addition to the text offer *advertisements on machinery and equipment* that keep him up-to-date and help him make his contacts and selections.

The Recent Trends in Scientific Management (1921-1949): With all this information on management and on managing available to everyone, scientific management and the methods of thinking and acting which it upheld were accepted still more widely. They were used, elaborated upon, and further refined especially during the years from 1924 to 1929, not only to expand all activities and to create even greater enterprises and organizations but also to add still more new, more specialized administrative tasks, more executive authorities, more departments, more policies, more functions, more detailed duties, more mechanisms into the framework of the rapidly expanding science.

By now the information on scientific management fills libraries, recent textbooks on this subject have up to 800 pages, and no college curriculum on management is considered respectable unless it offers in addition to the long-established courses on principles of management and organization at least some on economics, business laws, labor laws, labor relations, wages and incentive systems, corporation finance, accounting, cost accounting, transportation, purchasing, sociology, public speaking, psychology, time study, and possibly methods study. The science of management has grown in size, in scope, in courses, and in the number of book pages.

Unfortunately, however, the basic principles announced and formulated at

the beginning of this century have been retained and are still reiterated by most writers on management subjects. Said Dr. W. Spiegel, in bringing out the 1940 edition of his textbook on *Industrial Management*: "The fundamentals of management have changed little if any since the second edition of this book appeared in 1928" (Introduction).

This is regrettable, because it is proved that during the depression (1930 to 1934 or 1939) scientific management failed to prevent the bankruptcy of more than 60,000 industrial companies, could not give help to 2,400,000 industrial employees who lost their jobs, and neither the scientific experts nor the managers whom they had trained could offer a solution as to how to end the depression.

The continued adherence to the old but obsolete principles of industrial management is the more undesirable, since economic, social, and technological conditions have changed and progressed so profoundly that neither the old principles nor most of the methods of the kind of management which is still called "scientific" can be applied in any of the 280,000 small plants which exist today.

The small plants are especially important because they form the cells and foundation for manufacture. They are essential in many communities and fill many needs in the entire national economy. They simply cannot consider large executive groups, expert staffs, complex organization charts, departmentalization, personal authorities, executive ranking, psychology, extensive time study, complicated incentive systems, fine detail record keeping, or finest controls. Nor can they accept the numerous theories and principles of scientific management as the essence of the kind of management which they can and must apply in using their limited resources in their small, mostly local orbits of operation and with the small groups whom they can employ.

Somehow, the small plants need and large plants could well stand a different, better, and more direct kind of management.

KNOW-HOW MANAGEMENT

Know-how management is a practical kind of industrial management. It was developed by practical men in the face of urgent needs and in the desire to do better than could be done with scientific management. It, too, stems from the thinking of Frederick Winslow Taylor, but from then on, different names and men not mentioned in the scientific literature have developed it. They include thousands of practical managers, among them Henry Ford, small plant owners, and tens of thousands of foremen. It just grew, so far without much scientific treatment or academic blessings.

Know-how management is based on the desire to manage with a maximum of effectiveness and a minimum of management apparatus. It was developed

mainly to give a maximum of work at a minimum of cost per unit, in order to reach the widest market and the greatest number of people with the products. It created the mass-production industries, and is applicable in the smallest plants.

Know-how management does not stress any "administrative management organization" and does not exclude the worker or the facilities and machines from the scope of management. It does not rely mainly on time study and incentive systems in order to get more work done, nor does it concentrate its attention on production. It searches for practical men and uses such facilities and such methods for all activities involved in industrial endeavors that all these three basic elements combined yield higher rewards, more work, more goods, lower costs, more sales, and thus more progress is achieved for all concerned.

Know-how management, aiming at the creation of the greatest number of jobs, greatest satisfaction of human needs, and steady progress for the company, the individuals, the national economy—in spite of its humble name—is more scientific in concept and more practical in techniques than scientific management. While it is conceded by every expert and manager that scientific management could not be applied in its entirety in any one plant and was not applicable in large and small enterprises alike, know-how management actually has been applied and tested most successfully in largest as well as in smallest enterprises. It has been proved that it is universally useful and, therefore, it should be correct to conclude that it has "practical" qualities that are superior to any previous theory or system of management.⁸

The History of Know-how Management

Frederick Winslow Taylor: When Frederick W. Taylor pronounced the basic steps which he thought were needed to obtain better management and work improvement, he recommended planning as a distinct and rather important phase of management thinking. Unfortunately, he did not specify clearly and well how this planning should be done or how it should be applied. Furthermore, he stated that the planning department should replace the foreman, superintendent, and manager, and this quite definitely did not endear planning to them. For this very suggestion Taylor was most seriously attacked and deprecated by the old shopmen, who saw their traditional rights and prerogatives as bosses in serious danger.

Thus planning in general and even systematic and careful work-operation planning, which Taylor wanted to see applied in order to obtain a best flow of parts and production through the shop without waste of time or motion, were at first ignored and opposed in most plants. The foremen stood on their

⁸ For figures and facts see Chap. 7, pp. 198 and 200.

rights and authorities. Their personal ways of breaking down work, distributing it among the workers, routing it from workplace to workplace prevailed in most plants until World War I and even later. Planning remained an undeveloped principle of management, until gradually it was adopted in the form of operation-sequence planning, scheduling, and routing.

In recommending *planning* on a much wider scope, however, it was Taylor who introduced and indicated *the first and most important step* and procedure which has to be developed in order to obtain best management.

Henry Ford: When still operating a relatively small enterprise, in order to increase the volume of production of motor cars, to overcome inefficient foreman management, and to bring the price of his cars down, Mr. Ford tried before and during World War I most scientific management techniques known in those days. He also sought counsel from all kinds of management experts, wage-incentive experts, manufacturing-process experts, machine experts, material experts, work-transportation experts, work-scheduling experts, accounting experts, and many others. He installed, but also soon thereafter discarded, most of the so-called improvements and systems recommended by these "efficiency engineers."

Out of his many and varied disappointments and observations, he, with the help of his own production men, developed first a system of conveyor assembly work which in 1919 was superior to any other method of assembly, and later on he added his own system of production for parts and subunits, which soon became known as "mass production" or "line production."

The new kind of production management turned out at the start three times, then five times, and finally ten times more work in the same time. It achieved lowest costs per unit produced, paid highest wages in the industry, reduced paper work, eliminated nearly most kinds of management wastes, and provided utilization of machines, equipment, and facilities in such a manner that the workers could do more work without having to exert greater efforts than under any incentive system. Having achieved this, he developed new methods of selling and distribution, simplified the accounting and cost-accounting methods, and reduced administrative work to absolute necessities.

Ford's new methods of managing were revolutionary, direct, and most effective. They broke with every principle, rule, and system of organizing advocated in the scientific literature. Like Taylor's suggestion on planning, Ford's system of managing also was seriously attacked and misrepresented, until it was described in sufficient detail.⁹ Ford's book can well be considered as the first and so far the only presentation of know-how management, although it describes its possibly most unique and grandiose application.

⁹ Henry E. Ford. *My Life and Work*. New York. Doubleday & Company, Inc., 1923.

Ford's system of know-how management was so assuring and so superior in its fundamental procedures that it was adopted and adjusted to their specific needs by all companies who aimed to make products in large volume and at lowest cost per unit in order to broaden their markets. Many of these companies combined some of the principles of scientific management with those of know-how management, but there is no doubt that know-how production management gradually gave us at lowest prices not only automobiles but also rubber tires, accessories, bath tubs, radiators, refrigerators, electric home products, radios, hearing devices, shirts, suits, canned goods, meat and meat products, candies, toys, washing machines, window panes, buttons, pencils, and hundreds of other articles, which at first were made only in small plants, in small quantities and at high costs.

Know-how Management during the Depression and World War II, 1930-1945: While during the depression the principles of scientific management frittered away and were discarded one after the other, and while the over-expanded administrative management organizations were reduced to minimum dimensions, the best companies, big and small, retained and searched for new men with practical know-how. They searched for men with ability to analyze and to plan, to organize effectively, to operate economically, who did not overstress controls for the purpose of correcting or forcing their men into good performance but developed better ones to serve as guides toward still better planning, better organizing, and better operating.

Lack of sales, toughest price lowering, government aid to labor, growing union strength, and lowest profits or losses suffered by 90 per cent of all manufacturing establishments were the main factors which curtailed the continuance of nonproductive management, reduced administrative paper work to bare essentials, and discarded fancy accounting and budgeting that were always inaccurate and brought no tangible improvements.

For tens of thousands of managements the depression brought about a hard but useful change-over from scientific management principles to more effective know-how practices and procedures. And all bore their fruits when during World War II, directed by the planning and organizing of the War Production Board, not only tens of thousands of the larger companies but also 80,000 of the smaller plants turned to know-how operating, to an extent undreamed of as being possible before the war.

It has been said over and over that the know-how of American industry won the war and that it outproduced and outmanaged all other manufacturing systems. It can be safely stated that know-how rather than scientific principles will also bring about successful peacetime management. But if American industrial leadership is to endure, it will be necessary that know-how management and its procedures become general knowledge and practice

also in those plants, large and small, which so far have not given it much attention.

The Desire for Better Management after World War II: Those who after World War II expressed the need for better than scientific management have manifested their desires in actions rather than in scientific treatises. Among them are the following:

General Robert W. Johnson, one time head of the Smaller War Plant Corporation, president of Johnson & Johnson, pharmaceutical products company, who systematically decentralized the huge production facilities of that company into small plants, in order to obtain more efficient management, better relations between management and employees, and lower costs.

D. G. Mitchell, president of Sylvania Electric Products, Inc., who for the very same reasons has expanded this company in the form of rather small, decentralized plant units.

Charles E. Wilson, president of General Electric Company, who acquired after World War II about 80 rather small production plants throughout the country in order to spread activities in as wide an area as possible and to make these units most useful parts of their local environments.

There are quite a few other large-company presidents who, instead of the traditional centralization, now are advocating and managing on the principle of smaller plant operations, because they give better performance, fewer employee-relation troubles, higher effectiveness not only in production but also in sales, lower costs in transportation and in all other internal management activities and routines.

Charles P. McCormick, president of McCormick & Company, a small plant in Baltimore, established a management system which has become known as the McCormick plan, the main features of which were described in *Factory Management and Maintenance*, Vol. 104, No. 10, October, 1946, pp. 145-152. He advocates participation of workers and union members in the management of the enterprise, in order to obtain best consideration for and best cooperation from each member of the plant group. The system has been adopted so far in about 500 entirely different and mostly small production companies, in each instance with excellent results.

Besides, there are numerous authors who, in *Factory Management and Maintenance* and in other magazines, have expressed the need for better organizing and better management. They are aware of the needs but are not certain about the solutions. Most of them desire better methods that would give better management-employee relations, would create better organizations, would bring about better cooperation between foremen and management, would improve working conditions, would reduce grievances. Above

all, they desire the creation of legal conditions that would be fair to management and labor alike.

To be sure, there are dozens of scientists who want to make scientific management still "more scientific," and hundreds of executives who feel that the old routines and mechanisms of administration should be still "more refined." At the same time, there are tens of thousands of managers who clearly want a less complex, less hectic, and more effective kind of management. It is for their benefit that the basic procedures of know-how management have been formulated and are presented in this part of the study. The other chapters of this book, all written by men in entirely different lines of work, prove that know-how management is not a visionary dream but is and can be made a practical reality.

The Basic Procedures of Know-how Management

As extensive and insufficient as some of the "principles" of scientific management were, the "procedures" of know-how management are intensive and effective. They go to the core of things. They require no superexecutive organization and can be understood and applied in the biggest and in the smallest plant by anyone with native ability.

- I. *Know-how management recognizes that in order to accomplish any kind of work in the most effective way, four distinct procedures must be applied. They are*
 1. PLANNING
 2. ORGANIZING
 3. OPERATING
 4. SUPERVISING and controlling.

All four of these procedures are equally important, and truly best thinking in any one is reflected and makes best thinking easier to do in the others. All these procedures can and should be applied, in the sequence listed, to all contemplated activities or actions, be they in reference to engineering work, production work, sales work, or financial work, in the long trend or in the daily performance of these activities.

Scientific management insisted fundamentally on a definite segregation and specialization of the thinking phases of management and provided the "functional foreman specialist" and later the "specialized staffs" and "experts." Know-how management welcomes thinking by all members of the organization and provides such arrangements that their ideas can be made known and considered by the manager and also applied if they are good (effective suggestion systems, employee-management meetings, improvement sessions, and rewards).

Know-how management conceives these four procedures and coordinates the thinking and impulse-giving actions of management in two distinct thinking areas, namely in the:

- A. TOP-MANAGEMENT AREA, which covers the truly important, long-trend decisions that have to be considered as vital for the entire enterprise, its conduct, and all its people. And in the
- B. DAILY DETAIL MANAGEMENT AREA, which deals with minor, less important, but necessary decisions that have to be made in order to obtain best performance in every detail of daily action.

II. *Know-how management stresses PLANNING AND ORGANIZING as the most important of all management procedures* and does not concentrate primarily upon OPERATING AND CONTROLS as does scientific management.

When planning and organizing are best thought out and intelligently applied—and thus the beginnings of management thinking and acting have been done best—best operating must result as a logical sequence; also controls are no longer needed as tools to make the individuals, managers, and workers perform but become merely the means needed for guidance to improve planning and organizing in order to obtain still better operation. In this manner the whole management cycle is continuously revitalized in a factual, impersonal manner. The objectives all coordinate in an impartial way.

In conceiving management's tasks in this form, one acknowledges that management must set goals and achieve them. It is the task of management to constantly improve productivity in every activity. Wherever low productivity prevails, it can hardly be blamed on other than management, which simply has failed to improve its planning and organizing in such a manner that higher productivity would have resulted. The small plant manager cannot very well avoid his responsibility, nor can he blame others for nonsuccess.

III. *Know-how management thinks, plans, organizes, operates, supervises, and controls in terms of GROUPS.* It recognizes the importance of the individual and his abilities, but it aims from the very start to have the entire management and all men and each manager and all his men work as one group.

In the small plant as well as in the largest enterprise, work is done today by groups. If seen realistically, the final work operation done by the last employee is just as much needed as the originating thinking process of the top executive who is one of the group. After years of research the best indus-

trial psychologists finally have discovered that the creation of group feelings is far superior to and more effective than those management principles which stress individualism, introduce stratification, stress personal authorities, and divide the whole company into two groups (management and labor) reaping poor management-employee relations in return.

There was a time when industry could tolerate the prima-donna executive who, often by performance but still more often by sheer assertiveness, dominated the scene. The time has come when only those deserve to manage who really know and desire to be part of their group. In small plants there is little room for management stagecraft. It would do more harm than good.

IV. *Know-how management encompasses ALL WORK FACILITIES and ALL WORK METHODS into the fundamental scope of management*, and it coordinates all men, facilities, and methods into most effective work groups, all of which are considered as equally important for the progress of the company and all concerned.

Since in our day about 90 per cent of all production work is done by machines, equipment, and other facilities, and also in engineering, selling, and financial recording, the facilities and work methods are of greatest importance, know-how management definitely plans, organizes, operates, and supervises in *all* these terms, not only in terms of administrative men. This method of coordinating all the basic elements which are needed to get any kind of work done is as feasible and desirable in the small plant as it is in the largest company if best management is to be obtained.

V. *Know-how management aims to contribute to the creation of SATISFACTORY ECONOMIC CONDITIONS and to ECONOMIC PROGRESS by making products in such quantities and at such prices that a maximum number of people can buy them, and thus a maximum number of jobs is created and maintained in a more stable economy.*

The traditional methods of overstimulated and overrestrained management, which express themselves in form of cyclical overexpansions and corrective retrenchments, with mass layoffs, economic harm to millions of employees, and serious damage to tens of thousands of enterprises, mostly small ones, can hardly be considered good management and should, therefore, be avoided as much as possible.

Careful investigation reveals that the business cycle, so far considered as an unavoidable phenomenon of progress, is entirely too costly and too detrimental to the economy to be upheld further in theory or in practice. Business cycles are caused by management who, through more careful planning and

organizing, can create a less cyclical and more stable progress for all concerned.

Scientific management did not consider the interdependence of management action and economic developments, but know-how management believes that economics do not occur according to mystic or supernatural laws but that they are the sum total of all management actions.

THE BASIC TASKS OF THE MANAGER

If one attempts to establish from these procedures of know-how management the prime tasks of which a manager, and especially the small plant manager, should be aware and that he should fulfill, he will arrive at the following:

- A. FUNDAMENTALLY HE SHOULD KNOW HOW TO
 - 1. PLAN
 - 2. ORGANIZE
 - 3. OPERATE
 - 4. SUPERVISE and control.
- B. IN DETAIL HE SHOULD KNOW HOW TO
 - 5. Fulfill the LEGAL REQUIREMENTS
 - 6. Get best EMPLOYEES and EMPLOYEE RELATIONS
 - 7. Get along with the UNION
 - 8. Buy best FACILITIES and MATERIALS
 - 9. Obtain best PRODUCTIVITY
 - 10. Do TECHNICAL RESEARCH
 - 11. Obtain best SALES
 - 12. USE ACCOUNTING
 - 13. Pay and save in TAXES
 - 14. Effect SAVINGS and use PROFITS.
- C. AT LEAST APPROXIMATELY HE SHOULD KNOW HOW TO
 - 15. Appraise ECONOMIC DEVELOPMENTS AT HOME
 - 16. Keep informed on ECONOMIC OPPORTUNITIES ABROAD.

The actual performance of good management is well-nigh impossible without a thorough understanding of all these fields. They correspond to the necessities of actual management and represent the basic scope of responsibilities with which a manager must deal and successfully solve.

In order to provide the necessary understanding and proper know-how guidance, each one of these tasks is discussed in detail in the following pages. Since small plant management covers thousands of different industrial activities, these chapters were especially prepared to indicate the basic think-

ing which should be followed rather than any strict rules or formulae which should be applied.

Management of even the smallest plant is no longer a simple affair. Those who attempt it without realization of the entire scope of their responsibilities either fail or else make good only by gradually learning how to master the many aspects of their managerial tasks.

CHAPTER 5

TOP-MANAGEMENT PLANNING FOR THE SMALL PLANT

BY

EDWARD H. HEMPEL, *Chairman*

*Small Plant Committee, Management Division, ASME*¹

In the small plant, more so than in any other enterprise, the owner or manager is top-management. Single-handed, he often is his own board of directors, all-round expert, troublemaker, trouble shooter, and often enough his own errand boy, representative, and ambassador. He is the small plant, he is the company, he is everything—but thus he also is his own success or failure.

He may have a partner, sales manager, foreman, accountant, banker, or friend with whom he may share the task of planning, but plan he must. It is his first assignment and the starting point for all other preparations and actions that are to follow.

If the planning is done well, really well, thoroughly considered, and reconsidered a few times until a final plan has been evolved, all necessary decisions can be made with that definiteness and clarity which make for success—in spite of difficulties, reverses, setbacks, delays, and unforeseen troubles.

If clear planning is not applied, if decisions are made “as, if, and when,” on the spur of the moment or as exigencies require or dictate—troubles, more troubles, and final failure are invited from the very start, which is the best place and the best time to foresee, forestall, and avoid them.

WHAT IS PLANNING?

Planning is a thinking process, which requires mainly concentration and repetition. It can be done in the office, at home, in the subway, on the park bench (Bernard Baruch), day or night, weekdays or Sundays, summer or

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winter. Even the most important planning requires no apparatus, not even money; it can be done without any expense. It requires only the use of the brain, nature's greatest gift to every man and every manager.

Planning is a thinking process which should precede any and every action. It consists of finding and selecting the best idea or scheme for

1. WHAT ACTION should be taken?
2. What should be the AIM or GOAL of such action?
3. How should the action be CARRIED OUT?
4. Also it should always consider WHY all actions should be undertaken and WHAT EFFECT they will have on all concerned.
5. It also should consider WHEN any decision or action should be stressed and carried out to be most effective.

What, How Much, How, Why, What Effect, and possibly When are the fundamentals of all actions and of all planning. If these are carefully considered and brought into alignment with each other, the action is properly planned in its fundamentals.

If, however, any one of these fundamentals is not or cannot be well considered, the action will be weak. If it is taken, it will need doctoring, and possibly it will fail; it will be difficult to organize, operate, and supervise. And if one considers this, he often will wait and abandon an action that cannot be planned well, thereby saving money and trouble.

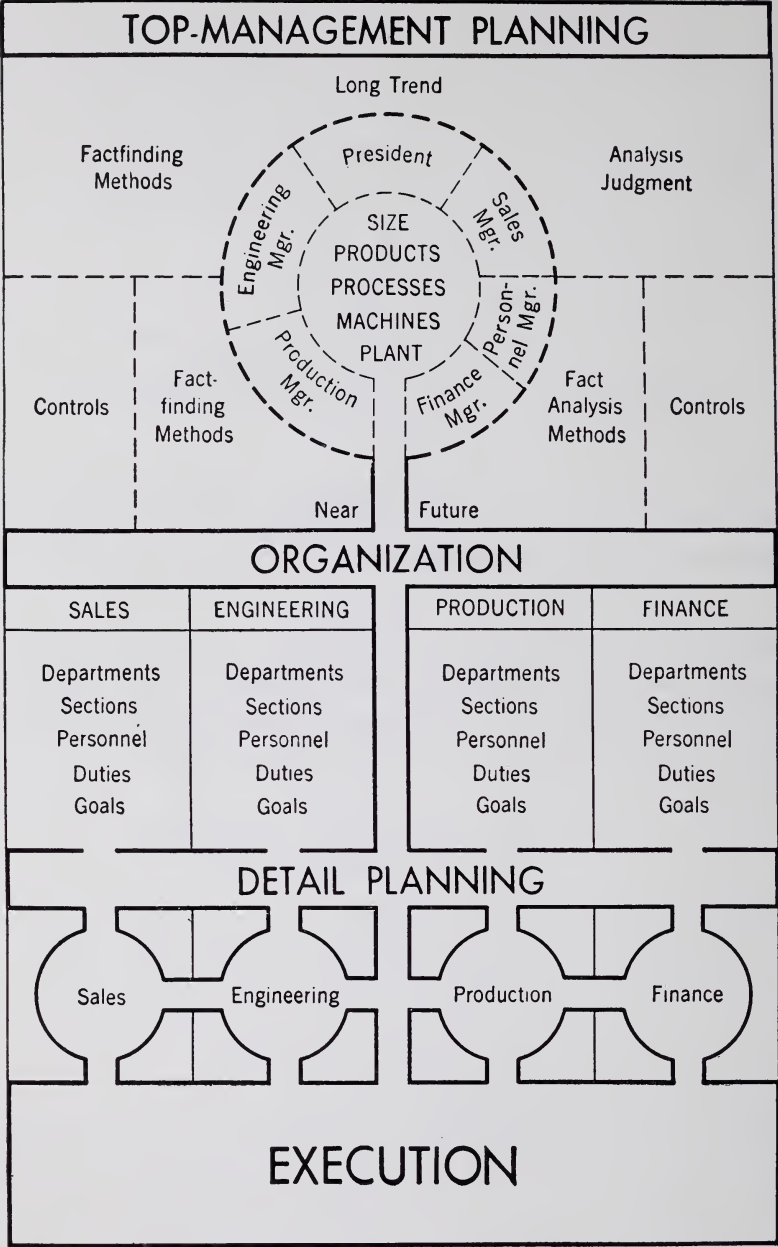
THE TWO KINDS OF PLANNING TO BE CONSIDERED

Man is superior to any other being because nature has bestowed upon him the ability to plan and even does part of the planning for him.

With his BRAIN man does his most important planning, upon which is based his very existence, his economic survival, his actions and deeds, his success and progress, his acquisition of knowledge, and intellectual superiority. The brain does the TOP-MANAGEMENT PLANNING.

In his SOLAR PLEXUS nature has provided him with and does for him all the detail planning which the human body needs in order to live, do work, create energy, and make every one of the working departments, nerves, and muscles of the body function in such perfect coordination as the complex plant requires. The solar plexus does the DETAIL WORK PLANNING.

The same two kinds of planning are needed in the smallest plant as well as in the largest plant. Both must be systematically developed and applied if best performance is desired for the plant. The chart on page 102 tries to visualize the arrangement.



Scientific management, ever since the time of Frederick Winslow Taylor, introduced and stressed only work detail planning, which by now is widely recognized as necessary and as part of good production management, but it failed to stress and develop top-management planning as a prerequisite of management, although it has to be applied in more or less perfect ways in every company which manufactures any kind of products, be they in small or in largest quantities.

How to do top-management planning is described below. How to do the detail planning is discussed in Chap. 7 on Operating the Small Plant and in the more specific chapters covering the know-how of handling men, selling, buying, accounting, etc.

TOP-MANAGEMENT PLANNING

Six Basic Objectives That Must Be Planned

The small plant manager, who has no staffs to aid him and who must do his planning as well as his organizing, operating and supervising, must concentrate his forward thinking upon six objectives which are more important than all others. He must determine, often far in advance of actual execution,

1. PRODUCTS—which ones should be made?
2. SALES—how much can be expected and obtained?
3. PROCESSES AND IMPROVEMENTS—which ones should be used to make the products in the expected volume of sales?
4. MACHINERY AND EQUIPMENT—what and how much will be needed?
5. PLANT—what kind and how much should be acquired to house the people, machinery, materials, and products properly?
6. LOCATION AND ACTIVITY AREA—where should the enterprise operate?

Most small plant managers tend to start their planning with a list of personnel which they would like to have or expect to need. Others start with the size of the plant or the amount of floor space they expect to use. Still others begin their planning with the amount of money that they have and will try to borrow or the kinds of partners they would like to find, etc.

No matter how anyone may care to start his planning, he soon will find himself confronted with the task of having to form clear goals for all the six basic objectives. Without them no one can and no one should attempt any manufacturing.

Whether the objectives are planned in the listed order or in any other depends on preference and circumstances, but it is certain that these six decisions are interlocking so closely that none of them can be omitted. It is

further desirable that all these objectives or goals be considered and decided upon first in physical units and from technical angles before any calculations of costs, prices, personnel requirements, financial considerations, and possible profits can be thought of or estimated.

Furthermore, it is undesirable to start with dollar-and-cent calculations before the fundamental planning *and* also the detail execution planning have been considered at least tentatively. Costs of materials, wages, overhead, all these may but rarely can be accurately estimated unless the daily work details also have been studied, detail plans have been made on how the daily production will be carried out and how the sales plans actually will be translated into daily activities. Only then should one try to figure costs, prices, and probable profits.

HOW TO PROCEED IN PLANNING

All planning must be done in four distinct steps. Each step should be done as thoroughly as patience and time permit. In large companies, most careful research and often months of patient investigation are usually given to *fact finding*, which is the first step toward planning. *Analyzing*, which is the second step, usually requires much less time. *Concluding* is the third step and actually means the selection of the most desirable solution supported by the preceding steps; *coordinating* all conclusions with each other finally *gives a plan and the methods for its fulfillment*.

Fact Finding: No small plant can afford a staff of patent attorneys, economists, statisticians, research engineers, development engineers, accountants, cost accountants and market specialists, who would obtain from various sources all the data which nowadays are being used in large-scale management as means for making decisions and for best management as "indicated by the facts."

Nevertheless, the smallest plant can subscribe to a few truly excellent publications now made available at most reasonable cost, and even if they are not read in all parts, those sections important to the plant should be read by someone who then will know at least where to get data. The following is only a tentative list for information on:

General and specific economics:

Survey of Current Business, monthly and weekly. \$3 per year. Washington, D.C., Government Printing Office.

Manufacturing data for all or specific industries:

Census of Manufactures, 3 vols., latest 1947. *Vol. I, General Summary*, \$2.75; *Vol. II, Reports for Industries*, all, \$4.50; *Vol. III, Reports*

for States, all, \$4.50; *Specific Industry Pamphlet*, \$0.10 or \$0.15.
Washington, D.C., Government Printing Office.

Technological and trade developments:

Subscription to a suitable trade magazine. Mostly \$10 for 3 years. Any public library has a complete list of such magazines. Most technological journals also cover new patents, research, machinery, equipment sections, and often advertisements of value.

Financial information, daily events, and comments thereon:

Subscription to any good newspaper.

This represents the very minimum of sources and data, but if carefully and continuously followed up, from them sufficient fact finding can be developed to be used in small plant management as well as in planning. Samples of the Census data are shown on the following pages.

Analyzing: Figures do not speak, nor do they always tell the whole story of what they mean. Analyzing, therefore, has to attempt to interpret the figures which are obtained through fact finding. Most managers take figures as they are, as pure information. Good managers aim to find out what they really mean and what has caused certain conditions. Doing this systematically, one obtains first a background knowledge, which then can be expanded and improved by continued analyzing of the most recent data.

A mere comparison of figures or conditions is not analysis. A systematic search is needed for the reasons and causes which have created the conditions or changes, so that one may see clearly which kind of action, decision, or correction can be and should be applied in order to obtain a planned condition.

Statistical methods of analysis rarely reveal these causes in sufficient detail, and therefore they are not always the best means for analysis. Often a simple question asked of someone who knows and can "explain" why certain conditions prevailed or why certain developments have occurred yields more pertinent information than any mathematical method.

Concluding: Once the real cause or reason for any factual condition is ascertained, one can proceed to think of improvements and thus come to the conclusion that a better or different method should or could be applied. Concluding generally means the finding of a more or of the most effective solution, method, approach, or activity which would bring about the effect desired: more sales, a better quality, lower costs, faster operation, less waste, or whatever it may be.

It happens often that one does not find the best conclusion in the first attempt. One may even conclude wrongly and thus direct one's efforts in

CENSUS OF MANUFACTURES: 1947

TOBACCO PIPES AND CIGARETTE HOLDERS

TABLE 1.—GENERAL STATISTICS FOR THE UNITED STATES: 1947 AND EARLIER CENSUS YEARS
[Money figures in thousands of dollars. For explanation of column captions see GENERAL EXPLANATIONS]

| INDUSTRY AND CENSUS YEAR | Number of establishments | All employees | | Production and related workers | | Value added by manufacture ¹ | Cost of materials, fuel, electricity, and contract work ² | Value of products shipped ³ |
|--------------------------|--------------------------|-------------------------------|---------------------------|--------------------------------|--------------|---|--|--|
| | | Number (average for the year) | Salaries and wages, total | Number (average for the year) | Wages, total | | | |
| Tobacco pipes: | | | | | | | | |
| 1947 | 76 | 3,140 | 8,810 | 2,745 | 6,302 | 13,738 | 5,357 | 19,325 |
| 1939 | 32 | 2,814 | 3,156 | 2,481 | 2,407 | 5,204 | 2,300 | 7,508 |
| 1937 | 25 | 2,559 | 2,818 | 2,332 | 2,413 | 5,124 | 2,523 | 7,647 |
| 1935 | 29 | 2,433 | 2,730 | 2,210 | 2,233 | 4,157 | 2,019 | 6,176 |
| 1933 | 22 | 1,431 | 1,273 | 1,362 | 1,145 | 2,314 | 960 | 3,274 |
| 1931 | 24 | n.a. | n.a. | 1,677 | 1,781 | 3,746 | 1,776 | 5,522 |
| 1929 | 23 | 1,937 | 2,580 | 1,661 | 1,661 | 3,809 | 1,749 | 5,538 |
| 1927 | 24 | 2,037 | 2,764 | 1,807 | 2,279 | 4,551 | 2,723 | 7,274 |
| 1925 | 28 | 2,261 | 3,045 | 1,970 | 2,291 | 4,531 | 2,718 | 7,299 |
| 1923 | 30 | 2,712 | 3,580 | 2,402 | 2,720 | 5,877 | 3,828 | 9,705 |
| 1921 | 36 | 2,038 | 2,601 | 1,785 | 1,937 | 4,295 | 2,826 | 7,124 |
| 1919 | 56 | 2,848 | 3,549 | 2,539 | 2,583 | 8,657 | 3,497 | 11,554 |
| 1917 | 62 | 2,951 | 4,134 | 2,774 | 2,834 | 9,912 | 2,308 | 4,220 |
| 1914 | 62 | 2,058 | 1,538 | 1,255 | 1,188 | 2,853 | 1,575 | 5,312 |
| 1909 | 68 | 2,029 | 911 | 1,947 | 1,775 | 1,480 | 2,459 | 5,324 |
| 1899 | 98 | 1,705 | 847 | 1,385 | 738 | 1,366 | 1,354 | 2,834 |
| | | | | | | | 1,106 | 2,472 |

TABLE 2.—GENERAL STATISTICS BY DIVISIONS AND STATES: 1947

[Money figures and man-hours in thousands. For explanation of column captions see GENERAL EXPLANATIONS]

| INDUSTRY, DIVISION, AND STATE | Number of establishments | All employees | | Production and related workers | | | | Value added by manufacture | Cost of materials, fuel, electricity, and contract work | Value of products shipped | Expenditures for new plant and equipment |
|---|--------------------------|-------------------------------|---------------------------|--------------------------------|------------------|--------------|--|----------------------------|---|---------------------------|--|
| | | Number (average for the year) | Salaries and wages, total | Number (average for the year) | Man-hours, total | Wages, total | | | | | |
| Tobacco pipes, total¹ | 76 | 3,140 | 8,810 | 2,745 | 5,552 | 6,302 | | 13,738 | 5,587 | 19,325 | 110 |
| Northeast | 42 | 2,893 | 7,683 | 2,176 | 4,477 | 5,204 | | 11,068 | 4,477 | 15,545 | 69 |
| New York | 40 | 1,440 | 4,205 | 1,255 | 2,546 | 3,063 | | 6,469 | 2,236 | 8,705 | 43 |
| North Central | 11 | 1,463 | 1,158 | 1,415 | 823 | 820 | | 1,744 | 655 | 2,399 | 22 |
| South and West | 8 | 214 | 571 | 152 | 252 | 278 | | 926 | 455 | 1,381 | 19 |

CENSUS OF MANUFACTURES: 1947

Tobacco Pipes (*Full Standard Industrial Classification title and number: Tobacco Pipes and Cigarette Holders, 3996.*)—This industry comprises establishments primarily engaged in manufacturing tobacco pipes, and cigarette and cigar holders.

TABLE 3.—DETAILED STATISTICS FOR THE UNITED STATES: 1947

[Money figures in thousands of dollars. For explanation of line captions see GENERAL EXPLANATIONS]

| ITEM | Industry | Cost of materials, fuel, electricity, and contract work | |
|------|----------|---|---------|
| | | Materials, parts, containers, and supplies | \$5,587 |
| | | Fuels, total | 5,216 |
| | | Bituminous coal | 46 |
| | | Anthracite | 19 |
| | | Coke | 4 |
| | | Fuel oils | 20 |
| | | Gas | 3 |
| | | Other fuels | 104 |
| | | Purchased electric energy | 221 |
| | | Contract and commission work | |
| | | Value of inventories: | |
| | | Beginning of year, total | \$4,663 |
| | | Finished products | 1,228 |
| | | Materials, supplies, and work in process | 3,435 |
| | | End of year, total | 4,637 |
| | | Finished products | 1,409 |
| | | Materials, supplies, and work in process | 3,228 |
| | | Expenditures for plant and equipment: | |
| | | New plant and equipment | \$110 |
| | | Construction and major alteration of fixed plants | 21 |
| | | Buildings | 21 |
| | | Other construction | 89 |
| | | Machinery and equipment | 71 |
| | | Production machinery and equipment | 18 |
| | | Other machinery and equipment | 28 |
| | | Used plant and equipment, and land | |
| | | Number of highway-type motor vehicles owned or leased: | |
| | | Trucks | 10 |
| | | By manufacturer's rated capacity: | |
| | | Under 1 1/2 tons | 5 |
| | | 1 1/2 tons | 4 |
| | | Over 1 1/2 tons and less than 3 1/2 tons | 1 |
| | | 3 1/2 tons and less than 5 tons | |
| | | 5 tons and over | |
| | | By body type: | |
| | | Van | 2 |
| | | Stake or platform | 3 |
| | | Panel or light delivery | 5 |
| | | All other trucks | |
| | | Truck tractors | |
| | | Trailers and semitrailers | |
| | | n.a.—Not available. | |

the wrong direction. Therefore, it will always be best to review any conclusion a number of times before any definite action is based upon it. In small enterprises there is the tendency to act quickly, to act somehow rather than with the necessary patience after repeated deliberation. This should be avoided.

Coordinating: In management no action is independent of the others. Any concluded action to be taken in buying is bound to have a definite effect in production; any step or change taken in production is bound to influence sales; any change in quality may have an effect in costs and prices; and so on.

Therefore, it should be only reasonable to coordinate all the planned actions or changes before one or more are put into effect. All should be harmonized with each other and modified if need be to bring about the best result for the entire plan.

In any well-operated shop or plant the manager has to rely on those who work with him, and he will invite them to help him in getting facts, in analyzing them, and in concluding on what better ways should be adopted. But it is for the manager personally to coordinate all the various proposals and to evolve the final plan or the definite program for next week, next month, and if at all possible, for one or more years ahead.

A brief summary and record of these decisions should be made, and the plan or at least parts thereof should be made known to all those possibly interested in it.

THE SETTING OF DEFINITE GOALS

For detail work planning the setting of work standards by the management has been recommended and has become general practice, because without them the workers would set their own, probably far below desirable levels. In really good management "not everyone writes his own ticket."

For management, therefore, standards also should be set, as difficult as it sometimes may be, in order to make the plan specific and to stake out the kind of management which would bring satisfactory results.

Whether these standards for management will be called standards, objectives, goals, or bogies should make no difference, but at all times the manager should set himself definite tasks in advance and stipulate the results which he would want to achieve in physical units or terms for each of his activities. As haphazard and uncertain as this goal setting may be in the beginning, definite objectives should be set for product development, sales, processing or manufacturing, machine utilization, and any kind of work to be done during any considered period and during each day—and from them should be derived objectives for costs, sales in dollar values, and profits.

At the start, and especially in a new plant, these goal-setting procedures may appear as utterly useless and a waste of time. Because of "unforeseen" developments they are not held or cannot be fulfilled, be it owing to material shortage, strikes, transportation troubles, or other reasons. But this very nonfulfillment is the signal for the manager that he still has to learn either how to set more correct goals or how to overcome the troubles. And much as this management goal setting may be ridiculed and doubted, it is the only method known to make an enterprise and all its members achieve at first good and finally excellent performance.

In setting definite goals for every activity, the prudent manager will not proceed entirely on his own. He will consult with associates, and he will also make some of the goals known to the workers, since any information as to the definite need for achieving the goals in order to keep their jobs is bound to interest the workers, and in consequence they will help to do better than hoped for.

Planning thus is one truly effective means for creating group interest, which in turn is the source wherefrom group energy and group efforts are derived. Planning helps to avoid or to overcome the gaps and antagonisms which now exist in so many plants between management and the men. A goal, stated in physical units or terms, can be appraised and understood by all concerned. A budget, stated throughout in dollar values, can hardly be publicized or used for creating good relations. Again, here is a point where know-how management is superior to any other.

PRODUCT PLANNING

The product is usually the first and last objective of small plant management. It is the expression of the small plant which the customer is expected to buy in increasing quantities and which he therefore scrutinizes, compares with other products, and finally reorders or refuses to buy again.

In planning the product or the variety of products to be made in the small plant, greatest care must therefore be applied to avoid mistakes from the very start, because any wrong decision influences all subsequent reasoning and leads into wrong planning of sales, processes, machines, and other errors.²

Which Products to Make in the Small Plant?

All products have been manufactured at one time or other in small plants, and thus in theory there is no limitation as to the kinds of products

² Good techniques can be found in U.S. Department of Commerce, *Check List for the Introduction of New Consumer Products*, Economic Series No. 41, and in U.S. Department of Commerce, *Check List to Help You Introduce Your New Industrial Products*, Economic Series No. 53. Washington, D.C., Government Printing Office.

that can be made on a small scale. Actually, however, it will be wise to avoid choosing those which by now are turned out in large plants, mainly because the processing or the quantities to be made require large-scale operations, many men, or complex plant facilities.

Good products for small plants are relatively small and not too heavy, require not too difficult or extensive processing, can be made with not too heavy equipment or machines, and can be sold at a relatively good price per pound. It has been found that products selling at a few cents per pound: steel, sugar, flour, heavy chemicals, and similar ones, must be made in largest quantities in order to achieve low prices, and thus are not well suited.

Best suited for small plant manufacture are products having distinctive character—specialties whose quality features give them individual appeal or requiring fulfillment of definite specifications on material, workmanship, finish, or packaging.

Nearly one-third of all small plants actually make products, parts, or accessories under definite contracts as suppliers for larger companies. Thus they simplify not only their production but also their research and selling problems (automobile parts, radio parts, standard parts, small forgings, castings, etc.). Another third of all small plants do quite well with products that require specialized know-how for their manufacture (dresses, hats, instruments, special tools, food products, costume jewelry, etc.), and in quite a few of them careful research and experimentation are applied to develop and improve them. The last third of all small plants struggle along with products really difficult to make and sell (precision tools, chemical specialties, violins, bridal costumes, and similar articles).

There is no hard and fast rule which would help in selecting the product or product variety that would be best for small plants, except that one can safely state that only those products should be made which the owner or one of his associates actually knows how to make well. Often the foreman or one of the workers is the real product and process expert, and while the manager may merely supply the management know-how, someone must know how to make the products.

Product Program Variety to Obtain Economic Protection

No large company makes only one simple product in only one size, because such product planning would not be safe enough for the long run. Equally, the small plant should aim to make at least a number of different, although similar or closely related, products in order to be better protected against changes in products, tastes of the buyers, designs, prices, or new products brought out by competitors.

In planning the product program, at least some careful thinking should

be devoted to considering the technological as well as the economic and competitive future prospects of the products to be made, and if any danger signs or uncertainties are discerned, proper action should be planned.

A systematic, critical, quarterly review of the entire product program should be a definite feature of product planning. Most small plant managers overlook doing this; besides they fail to keep themselves informed on new or better products brought out by competitors, and after a while their products are outdone by others.

Actually, the products as well as the product variety and the product programs of many small plants are not quite so up-to-date as they should be and many opportunities to obtain new or larger orders and thus the opportunities to grow are lost. Many would do well critically to examine their product line.

On the other hand, there are quite a few small plant managers whose product variety leaves hardly anything to be desired. They visit exhibitions, read the trade papers, discuss or ask for new product ideas from old and prospective new customers, and then they begin making those products as best they can with their available or some additional machinery.

While always considering the commercial and sales possibilities of all their products, they primarily form their product programs on the basis of the technical possibilities given by the machinery which they can afford. In this manner also their research and development activities are not blind dabblings in entirely new fields, but they are guided by at least some experience with older products which they utilize in making newly added ones.

Product Comparison, Product Rating, and Product Pricing

No small plant manager can be induced to undertake as elaborate product research, product analysis, product cost, and price studies as have become the practice in large companies.

But even in small-scale product planning three vital questions arise frequently enough and always are of critical importance whenever a customer or the manager himself asks them in order to make a decision. These questions are:

1. How do our products COMPARE with those of competitors?
2. How should or could our product be RATED?
3. WHAT PRICE would be really justified for our products?

There was a time when competition was keen but not overly so. Then it was common and best practice to "calculate the cost per unit," and often enough one could sell a product at a price based on these costs plus a gross profit sufficient to cover expenses and net profit.

Today and in the future the small plant manager will find himself confronted with competition much more alert and stronger than ever before, and competition rather than costs sets the price. If the manufacture of any product is attempted at all, a process of making it must be found with costs so low that they suit the competitive price. For these reasons the questions of product comparison and rating become even more significant, in order to determine how any product really rates and should be priced relative to its competitors.

Product Comparison

Every manager knows his competitors, and often enough he thinks he also knows their products from listening to rumors, hearsay, or customers' comments. Actually, however, he gets to know the competitive products and can compare his own with them only if he employs at least a simple but systematic product comparison.

A direct but good product comparison will always cover and compare at least two or more competitive products as regards the following characteristic features, which are essential for the appraisal and comparison of competitive products with one's own:

1. MATERIALS or COMPOSITION and their CHARACTERISTICS
 - a. Main materials used
 - b. Special materials used
 - c. Claims made on quality, specifications, superiority
 - d. Own appraisal or analysis of material specifications.
2. ENGINEERING FEATURES
 - a. Basic principles used in the mechanisms
 - b. Design and arrangement of subunits or sections
 - c. Design and function of most important parts
 - d. Appraisal of form, shape, contours, lines, appearance
 - e. Obviously poor engineering features and design, errors, oversight mistakes, and other weaknesses.
3. WORKMANSHIP
 - a. How well made as a whole (fair, good, very good, excellent)
 - b. Workmanship in the main parts
 - c. Workmanship in the less important parts
 - d. Distinct superiority of workmanship
 - e. Distinct carelessness, defects, and other poor workmanship.
4. USEFULNESS or UTILITY IN REGULAR USE
 - a. Fulfillment of promised performance
 - b. General character of performance
 - c. Simplicity or pleasantness of operating or using

- d. Complexity or difficulty of operating or using
 - e. General summation on operability or usability.
5. DANGERS OR DAMAGES THROUGH ABUSE
- a. Possibility of accident to operator
 - b. Possibility of destruction of product
 - c. Possibility of fire, damage, poisoning, etc.
 - d. Possibility of lawsuits due to product defectiveness
 - e. Possibility of lawsuits for claims, guarantees, promises, etc.

A comparison of all these features of one's own and of a few competitive products does not really require too much time, but it is of great informative value in so far as the manager can correct the weaknesses in his own product before he has sold it to the public and irate buyers or competitors point out the weaknesses.

Product Rating

It is only natural that any manager considers his products as superior to any others, and it is well known that small plants generally aim to turn out products which are at least good, do what is promised, or are even a trifle better than absolutely necessary. Good product quality is the premise for the small plant staying in business.

Nevertheless, it always pays to make sure about the quality of products, which can be done relatively quickly and without excessive expense. Product rating, and especially *comparative product rating*, often gives surprising data and unexpected information.

In rating products it is always wise to rate each of the products on all features in which they were compared, rating them first roughly only as fair, good, very good, excellent. Shortcomings or weaknesses can be rated similarly but as negative values: passable, poor, very poor, bad.

Once that is done, one can introduce point values into the rating as follows:

| | | | | |
|---------|----------|------|-----------|-----------|
| Grade: | Fair | Good | Very good | Excellent |
| Points: | 25 | 50 | 75 | 100 |
| Grade: | Passable | Poor | Very poor | Bad |
| Points: | -25 | -50 | -75 | -100 |

And with increasing experience one can give even more accurate point ratings: 5, 10, 15, 20, 25; 30, 35, 40, 45, 50; 55, 60, 65, 70, 75; 80, 85, 90, 95, 100 points or the negatives thereof.

A fairly good comparative product-rating scheme should look like the one shown in Table 1. Modifications always will be in order to suit different products or conditions.

TABLE 1. SMALL RADIO-MANUFACTURING PLANT COMPARATIVE RATING SHEET
Model 48-201

Date

| Characteristics | General Rating | | | Competition | Point Rating* | | | | |
|--------------------|----------------|------|-------|-------------|---------------|-----------|-------|-------|---|
| | Own | A | B | | C | Own | A | B | C |
| | Table set | | | | | Table set | | | |
| Model..... | 48-201 | 3797 | H2110 | 48HCD | 48-201 | 3797 | H2110 | 48HCD | |
| Material Used..... | VG | .... | .... | .... | 480 | 485 | 480 | 465 | |
| In chassis..... | E | VG | E+ | G | 95 | 100 | 100 | 90 | |
| In coils..... | G | E | E- | E | 100 | 95 | 95 | 100 | |
| In housing..... | VG | E | VG | G | 90 | 100 | 95 | 90 | |
| Appearance..... | E | G | VG | G | 95 | 90 | 95 | 90 | |
| Knobs..... | E | E | VG | VG | 100 | 100 | 95 | 95 | |
| Engineering..... | .... | .... | .... | .... | 495 | 470 | 485 | 470 | |
| Tubes..... | 4 | 4 | 5 | 4 | 100 | 100 | 105 | 100 | |
| Arrangement..... | E | VG | G | G | 100 | 95 | 90 | 90 | |
| Rheostats..... | VG | G- | VG | VG | 95 | 85 | 95 | 95 | |
| Loud-speaker..... | E | G | E | VG | 100 | 90 | 100 | 95 | |
| Tuning..... | E | E | VG | G | 100 | 100 | 95 | 90 | |
| Workmanship..... | .... | .... | .... | .... | 485 | 500 | 465 | 420 | |
| Over-all..... | VG | E | E | G | 95 | 100 | 100 | 90 | |
| Wiring..... | VG | E | G | G | 95 | 100 | 90 | 90 | |
| Soldering..... | E | E | E | VG | 100 | 100 | 100 | 95 | |
| Connections..... | VG | E | E | G | 95 | 100 | 100 | 90 | |
| Housing..... | E | E | VG | G | 100 | 100 | 95 | 90 | |
| Untidy..... | .... | .... | -20 | -35 | .... | .... | -20 | -35 | |

| | | | | | | | |
|-----------------------------|------|------|-------|---------|---------|---------|---------|
| Usefulness, regular..... | .... | .... | .... | .... | 591 | 568 | 540 |
| Clearness..... | E | .... | E— | VG | 100 | 98 | 95 |
| Static..... | none | .... | some | some | 100 | 95 | 95 |
| Station interference..... | none | .... | 2 | 4 | 100 | 90 | 80 |
| Tone qualities..... | E | .... | VG | 15" | 98 | 95 | 90 |
| Warm up..... | 5" | .... | 10' | G | 95 | 95 | 90 |
| General..... | E | .... | VG | G | 90 | 95 | 90 |
| Dangers, abuse..... | .... | .... | .... | .... | 490 | 480 | 480 |
| Tube trouble..... | none | .... | 2 | 3 | 95 | 90 | 80 |
| Connection trouble..... | none | .... | none | 1 | 100 | 100 | 90 |
| Damage to housing..... | yes | .... | dulls | streaks | 95 | 90 | 90 |
| Fuses..... | OK | .... | OK | 1 blew | 100 | 100 | 80 |
| Guarantees..... | OK | .... | OK | OK | 100 | 100 | 100 |
| Total rating..... | .... | .... | .... | .... | 2,536 | 2,478 | 2,335 |
| Units sold..... | .... | .... | .... | .... | 190,000 | 120,000 | 60,000 |
| Retail Prices (\$ )..... | .... | .... | .... | .... | \$22.50 | \$22.00 | \$18.00 |
| Retail Price should be..... | .... | .... | .... | .... | \$22.50 | \$21.50 | \$20.35 |

* Good — 90; very good — 95; excellent — 100.

Pricing on the Basis of Rating

The point ratings obtained through comparison should be used either to:

1. *Check* on the competitiveness of the price being asked for the products of the small plant or to
2. *Set new prices* truly in line with the competitive qualities of the products considered.

The best selling competitive product usually will serve as the best suited measuring stick.

The rating sheet shows that competitor A sold 190,000 units of model 3797 at a price of \$22.50 per unit. The model rated 2,536 points.

Accordingly, table set 48-201 with a rating of 2,550 points should be priced a trifle higher, but not much higher than \$22.50.

The justified competitive quality price for the table set 48-201 would be

$$2,550 \div 2,536 = 1.005 \times \$22.50$$

i.e., approximately \$22.60 or possibly \$22.75.

At its present price of \$25 it is priced too high.

In this manner prices can be checked for competitiveness or calculated for new products to be made by the small plant. Only if suitable costs can be achieved are the new products worth making. If the expected costs leave no profit, the new products can hardly find a market at higher prices that do not meet competitors' prices and qualities. The low unit sales of model 48-201 are thus explained, and a remedy must be sought.

SALES PLANNING AND FORECASTING

Sales are the prerequisite for the very existence of any enterprise and must be considered in advance in order to evolve any kind of management scheme. The more accurate the sales estimates are the more successful the management will be.

There are many ways of anticipating sales. Many small plant managers simply do not consider them at all in advance. They merely make a convenient quantity of their products and then try to sell what they have. Others try to get orders first and then make as many products as were ordered. The more circumspect try to obtain some information on future sales possibilities and adjust their planning accordingly.

Sales forecasting for small plants is definitely more difficult than sales forecasting for big plants and biggest enterprises. But it can be done with a fair degree of reliability, provided at least some of the most fundamental data are gathered and used.

How Much Sales to Aim For?

For a new small plant one cannot make any definite sales forecast, because neither its products nor the effectiveness of its sales efforts are as yet known. In this instance, sales simply have to be "pegged" approximately. It is best to set the first sales goal not for one or a few months ahead but for the entire first year.

During the first year the new small plant should obtain as much in unit sales as the corresponding dollar value equaling the amount which covers the entire investment in the form of plant, inventories, machines, equipment, or whatever else there is in form of assets. Generally, in the first year the net asset investment is almost the same as the total capital invested by the owner and borrowed from banks and associates. Accordingly, in the

SALES FORECAST GOAL for the FIRST YEAR

NET SALES should equal NET ASSET investment or CAPITAL.

This technique of pegging is concededly crude but is supported by the know-how that with such a sales volume most small plants show satisfactory operating results and possibly profits. If sales are below the net asset investment at the end of one year, most likely a loss will result which may become serious; if this happens, it is advisable to review the sales efforts and to improve them as much as possible.

During the second and following year most plants add equipment, increase material stocks and tools, and should increase their net sales in order to maintain the proper balance between sales and capital. The same kind of pegging sales as described above will usually give at least a tentative sales goal for these years. But if progress is aimed at, the formula for sales forecasting should be

SALES FORECAST GOAL for the SECOND and THIRD YEAR

NET SALES *should at least equal* NET ASSET investment.

This means that, as soon as possible, the sales planning should aim at somewhat higher than absolutely necessary sales goals, and if the actual sales data are analyzed monthly, the manager will soon learn whether his efforts and sales activities result in sufficient sales. By reviewing monthly, he also will learn more about seasonal changes in demand and about the best timing for sales and production efforts in order to get a maximum of results.

Sales Forecasting Based on Sales Ratios

After a plant has been in existence three years, products, sales, production, costs, and pricing methods should be very carefully gone over and analyzed, in order to prepare for a more active and ambitious sales forecasting. This should make use of the company's own data on sales and compare them with the sales obtained by other sellers in the area in which the small plant has been selling.

Until 1929 it was almost impossible to obtain any definite figures on product-line sales for any given community, city, or area. But in view of the great importance that such information has for all manufacturers and trading establishments concerned, the U.S. Department of Commerce, Bureau of the Census, Government Printing Office, Washington, D.C., prepares a few publications which give excellent data for analyzing and forecasting sales in any line of products, in any area, and even in every township of more than 2,500 inhabitants. They are given in the following list:

- a. *Consumer Market Data Handbook* (Retail sales by kinds of products in United States, states, counties, cities, and townships over 2,500 inhabitants)
- b. *Census of Wholesale Distribution* (Sales made by wholesalers in United States, states, and counties)
- c. *Census of Retail Distribution* (Retail sales according to kinds of retail outlets in United States, states, counties)
- d. *Industrial Market Data Handbook of the United States* (Manufacturers' sales in United States, states, and counties).

By searching for the proper data, one can relate to them the equivalent sales data of the small plant and thus establish the

Sales Ratio (Percentage of Total Sales)
obtained by the Small Plant, as follows:

$$\text{SMALL PLANT SALES} \div \text{TOTAL SALES} = \text{RATIO (per cent).}$$

The ratio can be used as a control check as well as a means for making better than merely pegged-sales forecasts for the small plant. A sample page from the *1939 Consumer Market Data Handbook* follows. By studying these publications still more carefully, one can also see what kinds of middlemen the competitors use to reach the various markets, and gradually one can plan a truly good middlemen system and a sufficiently large distribution area. These are the two main factors for any plan of sales.

CALIFORNIA

| | STATE TOTAL | Alameda | | | | | | | | Alpine County | Amador County |
|---|----------------|---------|---------|---------------|---------|----------------|---------------|--------|---------|------------------|------------------|
| | | County | Oakland | Berke- ley | Alameda | San Leandro | Pied- mont | Albany | Hayward |  |  | Libe- more |
| POPULATION AND DWELLINGS, 1930 | | | | | | | | | | | |
| 1 Persons, Total No. (Thousands)..... | 5,677.3 | 474.9 | 284.1 | 82.1 | 35.0 | 11.5 | 9.3 | 8.6 | 5.5 | 3.1 | .2 |
| 2 Percent White..... | 89 | 94 | 94 | 94 | 96 | 99 | 98 | 99 | 99 | 98 | 57 |
| 3 Percent of U. S. Total..... | 4,624.1 | 3,368 | 2,214 | .0869 | .0285 | .0093 | .0076 | .0070 | .0045 | .0025 | .0002 |
| 4 Families, Total No. (Thousands)..... | 1,610.0 | 137.1 | 83.1 | 24.4 | 10.2 | 3.1 | 2.4 | 2.5 | 1.6 | .8 | .1 |
| 5 Percent Owning Homes..... | 46 | 53 | 50 | 52 | 57 | 63 | 84 | 66 | 62 | 48 | 69 |
| 6 Dwellings, Total No. (Thousands)..... | 1,403.2 | 118.0 | 69.8 | 20.4 | 9.0 | 3.0 | 2.4 | 2.5 | 1.5 | .7 | .1 |
| VOLUME AND TYPE OF BUSINESS & INDUSTRY, 1935 | | | | | | | | | | | |
| 7 Retailing, Total No. of Stores..... | 100,874 | 7,965 | 5,256 | 1,155 | 390 | 139 | 7 | 103 | 192 | 85 | a |
| 8 Sales (Million dollars)..... | 2,329.01 | 193.69 | 141.78 | 25.64 | 8.39 | 2.81 | .33 | 1.49 | 5.92 | 1.53 | a |
| 9 Percent of U. S. Total..... | 7,0233 | .5841 | .4275 | .0773 | .0253 | .0085 | .0010 | .0045 | .0178 | .0048 | a |
| 10 Sales per Capita (Dollars)..... | 410 | 408 | 499 | 312 | 239 | 245 | 36 | 174 | 1,070 | 491 | a |
| 11 Wholesaling, Total No. of Establishments..... | 12,342 | 648 | 534 | 36 | 12 | 2 | 1 | 1 | 17 | ..... | 0 |
| 12 Sales (Million dollars)..... | 2,975.25 | 130.07 | 112.74 | 3.62 | 1.68 | 12 | x | x | 2.32 | ..... | 0 |
| 13 Manufacturing, Total No. of Plants..... | 10,458 | 830 | 594 | 142 | 46 | 13 | ..... | ..... | ..... | ..... | 0 |
| 14 Value of Products (Million dollars)..... | 2,324.50 | 241.11 | 153.29 | 33.76 | 4.14 | 1.51 | ..... | ..... | ..... | ..... | 0 |
| 15 Farms, Total No. | 150,360 | 3,025 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 17 |
| EMPLOYMENT AND PAYROLLS, 1935 | | | | | | | | | | | |
| 16 Total Employees (Censuses of Business & Industry) No. | 934,052 | 72,419 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8 |
| 17 Wages Paid, Total Amount (Thousand dollars)..... | 1,169,472 | 87,803 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5 |
| 18 Retailing, No. of Employees..... | 252,524 | 21,617 | 16,068 | 3,041 | 861 | 260 | 39 | 112 | 477 | 123 | a |
| 19 Wages Paid (Thousand dollars)..... | 273,641 | 22,432 | 16,903 | 3,080 | 883 | 236 | 58 | 112 | 478 | 135 | a |
| 20 Wholesaling, No. of Employees..... | 108,857 | 4,910 | 4,193 | 194 | 55 | x | x | x | 101 | ..... | 0 |
| 21 Wages Paid (Thousand dollars)..... | 166,749 | 7,844 | 6,738 | 349 | 69 | x | x | x | 178 | ..... | 0 |
| 22 Manufacturing, No. of Employees..... | 259,193 | 25,893 | 15,895 | 2,723 | 834 | 339 | ..... | ..... | ..... | ..... | 0 |
| 23 Wages Paid (Thousand dollars)..... | 297,045 | 28,531 | 18,036 | 3,324 | 918 | 307 | ..... | ..... | ..... | ..... | 0 |
| 24 Mining, No. of Employees..... | 30,563 | 463 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | x |
| 25 Wages Paid (Thousand dollars)..... | 22,129 | 711 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | x |
| 26 Farming, No. of Persons on Farms..... | 608,833 | 10,880 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | x |
| 27 Gainfully Employed, 1930 (Thousand persons)..... | 2,501.0 | 206.0 | 126.1 | 35.2 | 14.5 | 4.5 | 3.6 | 3.4 | 2.3 | 1.4 | .1 |
| 28 Unemployed, No. reporting, 1937..... | 259,750 | 21,719 | 14,289 | 3,051 | 1,188 | 753 | ..... | ..... | ..... | ..... | 5 |

RETAIL DISTRIBUTION BY KINDS OF BUSINESS, 1935

| | | | | | | | | | | | | | |
|----|---|---------|--------|--------|-------|-------|-------|-------|-----|-------|-------|---|-------|
| 29 | Food Stores, No. | 26,849 | 2,567 | 1,707 | 388 | 151 | 89 | 3 | 39 | 49 | 18 | a | 21 |
| 30 | Sales (Thousand dollars) | 561,468 | 50,766 | 32,612 | 9,164 | 3,636 | 1,102 | 194 | 577 | 1,402 | 470 | a | 453 |
| 31 | Index of Place in Local Sales (Place in U.S.=100) | 96 | 104 | 91 | 142 | 172 | 136 | 232 | 134 | 94 | 122 | c | 68 |
| 32 | Eating and Drinking Places, No. | 18,281 | 1,357 | 961 | 123 | 53 | 27 | 1 | 20 | 28 | 17 | a | 38 |
| 33 | Sales (Thousand dollars) | 189,029 | 13,342 | 9,553 | 1,814 | 654 | x | x | 81 | 260 | 115 | a | 221 |
| 34 | Index of Place in Local Sales (Place in U.S.=100) | 113 | 96 | 93 | 98 | 108 | ..... | ..... | 75 | 61 | 104 | a | 116 |
| 35 | Amusement Places (No. in food), No. | 797 | 18 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | a | 18 |
| 36 | Sales (Thousand dollars) | 26,293 | 424 | 10 | x | 0 | x | 0 | 0 | 0 | 0 | a | 676 |
| 37 | Index of Place in Local Sales (Place in U.S.=100) | 34 | 7 | b | ..... | 0 | ..... | 0 | 0 | 0 | ..... | a | 764 |
| 38 | General Merchandise Group, No. of Stores | 2,115 | 141 | 80 | 27 | 12 | 4 | 0 | 0 | 6 | 3 | a | 1 |
| 39 | Sales (Thousand dollars) | 300,871 | 35,031 | 31,822 | 2,137 | 324 | 199 | 0 | 8 | 391 | 74 | a | x |
| 40 | Index of Place in Local Sales (Place in U.S.=100) | 93 | 130 | 161 | 60 | 28 | 51 | 0 | 4 | 47 | 35 | a | ..... |
| 41 | Apparel Group, No. of Stores | 6,427 | 494 | 345 | 87 | 19 | 7 | 0 | 4 | 17 | 8 | a | 8 |
| 42 | Sales (Thousand dollars) | 189,645 | 15,353 | 13,036 | 1,626 | 172 | 41 | 0 | 12 | 243 | 86 | a | 109 |
| 43 | Index of Place in Local Sales (Place in U.S.=100) | 102 | 99 | 115 | 79 | 26 | 18 | 0 | 10 | 51 | 70 | a | 52 |
| 44 | Automotive Group, No. of Dealers & Garages | 9,050 | 600 | 371 | 92 | 31 | 21 | 0 | 5 | 15 | 10 | a | 16 |
| 45 | Sales (Thousand dollars) | 379,936 | 29,832 | 21,309 | 4,007 | 1,303 | 527 | 0 | 410 | 1,208 | 238 | a | 574 |
| 46 | Index of Place in Local Sales (Place in U.S.=100) | 117 | 111 | 108 | 113 | 112 | 135 | 0 | 198 | 147 | 107 | a | 156 |
| 47 | Filling Stations, No. | 12,724 | 901 | 476 | 104 | 37 | 26 | 2 | 10 | 18 | 8 | a | 9 |
| 48 | Sales (Thousand dollars) | 153,660 | 10,704 | 6,323 | 2,025 | 685 | 271 | x | 92 | 206 | x | a | 168 |
| 49 | Index of Place in Local Sales (Place in U.S.=100) | 111 | 92 | 75 | 133 | 138 | 163 | ..... | 104 | 59 | ..... | a | 107 |
| 50 | Furniture-Household Group, No. of Stores | 3,605 | 274 | 177 | 54 | 16 | 5 | 0 | 4 | 11 | 2 | a | 1 |
| 51 | Sales (Thousand dollars) | 112,755 | 9,589 | 8,265 | x | 254 | 59 | 0 | 22 | 249 | x | a | x |
| 52 | Index of Place in Local Sales (Place in U.S.=100) | 124 | 127 | 150 | ..... | 78 | 54 | 0 | 38 | 108 | ..... | a | ..... |
| 53 | Lumber-Bldg.-Hardware Group, No. of Stores | 3,673 | 239 | 128 | 43 | 14 | 7 | 0 | 6 | 15 | 5 | a | 4 |
| 54 | Sales (Thousand dollars) | 141,780 | 8,033 | 5,226 | 903 | 647 | 204 | 0 | 192 | 380 | 74 | a | 249 |
| 55 | Index of Place in Local Sales (Place in U.S.=100) | 106 | 74 | 66 | 63 | 137 | 129 | 0 | 230 | 114 | 86 | a | 167 |
| 56 | Drug Stores, No. | 3,374 | 271 | 177 | 48 | 12 | 8 | 1 | 4 | 6 | 2 | a | 8 |
| 57 | Sales (Thousand dollars) | 89,517 | 6,032 | 3,856 | 1,336 | 340 | 128 | x | 44 | 117 | x | a | 89 |
| 58 | Index of Place in Local Sales (Place in U.S.=100) | 103 | 84 | 73 | 140 | 109 | 123 | ..... | 80 | 53 | ..... | a | 64 |
| 59 | Other Retail Stores, No. | 13,979 | 1,203 | 831 | 188 | 45 | 23 | 0 | 12 | 27 | 11 | a | 13 |
| 60 | Sales (Thousand dollars) | 184,055 | 14,594 | 9,769 | 1,933 | 374 | 135 | 0 | 50 | 1,460 | 129 | a | x |

| RELATED INDICATORS OF CONSUMER PURCHASING POWER | | | | | | | | | | | |
|---|--|-----------|---------|----------|----------|--------|-------|-------|-------|-------|-------|
| 61 | Individual Income Tax Returns, 1934, Total No. | 308,652 | 30,584 | 17,390 | 7,411 | 2,636 | ..... | ..... | ..... | ..... | 27 |
| 62 | Net Incomes below \$1000, No. | 34,110 | 2,562 | 1,487 | 577 | 176 | ..... | ..... | ..... | ..... | 1 |
| 63 | Net Incomes \$1000 - \$3000, No. | 183,534 | 19,157 | 11,384 | 4,262 | 1,707 | ..... | ..... | ..... | ..... | 17 |
| 64 | Net Incomes \$3000 - \$5000, No. | 61,085 | 6,547 | 3,389 | 1,854 | 560 | ..... | ..... | ..... | ..... | 5 |
| 65 | Net Incomes \$5000 - \$10,000, No. | 22,792 | 2,034 | 964 | 618 | 155 | ..... | ..... | ..... | ..... | 1 |
| 66 | Net Incomes above \$10,000, No. | 7,131 | 384 | 166 | 100 | 38 | ..... | ..... | ..... | ..... | 1 |
| 67 | Individual Income Tax Returns, 1935, Total No. | 377,470 | 36,951 | 21,082 | 8,823 | 3,161 | ..... | ..... | ..... | ..... | 3 |
| 68 | No. per 1000 Persons | 66 | 78 | 74 | 107 | 90 | ..... | ..... | ..... | ..... | 4 |
| 69 | Passenger Automobiles Registered, 1936, No. | 1,899,853 | 140,830 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 |
| 70 | No. per 100 Families | 118 | 103 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8 |
| 71 | Families with Radios, 1938, Total No. | 1,719,800 | 145,680 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 51 |
| 72 | No. per 100 Families | 107 | 106 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 78 |
| 73 | Residential Telephones, 1935, Total No. | 780,018 | 87,865 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 70 |
| 74 | No. per 100 Families | 48 | 64 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 108 |
| 75 | Domestic Electric Meters, 1930, Total No. | 1,513,788 | 136,547 | 77,837 | 24,349 | 10,000 | ..... | ..... | ..... | ..... | 737 |
| 76 | No. per 100 Families | 94 | 100 | 94 | 100 | 98 | ..... | ..... | ..... | ..... | ..... |
| 77 | Circulation of 12 National Magazines, 1937 | 2,271,712 | 203,189 | 5127,149 | 4,48,812 | 13,812 | ..... | ..... | ..... | ..... | ..... |
| 78 | No. per 100 Families | 141 | 148 | 143 | 182 | 436 | ..... | ..... | ..... | ..... | ..... |
| 79 | Circulation of 6 General Magazines, 1937 | 1,133,898 | 102,955 | 565,208 | 424,530 | 7,081 | ..... | ..... | ..... | ..... | ..... |
| 80 | Circulation of 6 Women's Magazines, 1937 | 1,137,814 | 100,234 | 561,941 | 424,262 | 6,731 | ..... | ..... | ..... | ..... | ..... |
| 81 | Farms, 1935, Value (Thousand dollars) | 2,325,446 | 36,969 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 82 | Value per Farm (Dollars) | 15,466 | 12,217 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

x -- Withheld to avoid disclosure.

c -- Magazine circulation data for San Leandro and Piedmont included in Oakland.

d -- Magazine circulation data for Albany included in Berkeley.

b -- Less than 1.

Many small plants have failed really to plan their sales activities, but a surprisingly large number of small plants are sufficiently well informed and keep informed actually to plan their sales. They plan their sales campaigns, plan their advertising, plan for sales expansion whenever opportune, and regularly try to forecast their sales at the beginning of each year.

Sales forecasting and sales planning are especially important when markets shrink, buyers reduce or hold back on orders, prices decline, and competition begins to be real competition. It is wise to think of this in time and to plan for it.

PROCESS SELECTION AND PROCESS PLANNING

The small businessman or trader merely buys and sells. *But the small plant manager has to make products, and the process which he uses contributes to his success or failure.* Often the process is the very foundation of the small plant, for the uniqueness, economy, or special quality of products which it yields. In most small plants, excellent, up-to-date, clean, efficient, and low-cost processing is practiced. In many of them, however, outdated, neglected, and thus costly processing prevails. This need not be, as the increasing systematic decentralization of large plants into small but excellently equipped processing plants, located in small communities, definitely proves that small plant processing can be equal to and often is more economical than manufacturing in large concentrated factories.

How to Select a Process

The selection of a definite process and, later, the improvement of the installed process require technical know-how as well as careful observation of the manageability of the process, in order to plan correctly at the start and thereafter. It is not enough to install a process and then merely watch labor costs or processing costs, which mostly cover only labor and operating expenses.

The cost of labor has not and should not be given prime importance in selecting a process. There are very few industries left where the worker is the most important part or cost item of the process. Most processing nowadays must be studied by means of factual, technological operating data, and one process is superior to any others solely because better technological performance or better technical operating results are obtained. Know-how processing, properly understood and applied, does not concentrate upon the individual and wages, as was necessary when management became a science; it aims to improve the process and the methods of processing and then teaches the workers how to apply them. The manager must see to this.

In planning, comparing, studying, and finally selecting a process or process improvement, the fact finding, analyzing, and concluding should be directed especially upon the following:

1. One or more *basic techniques* which are applied
2. Most important basic pieces of *machinery or equipment*
3. Most important *specifications or instructions* that have to be fulfilled in the actual execution of the process
4. Most important *methods* which the workers have to observe
5. Most important *points where the process is controlled*
6. Other features of *technological or operational importance*.

If each of these points is carefully scrutinized and compared with processes or improvements which are offered, one can appraise and select one's own processes fairly reliably and effectively and also begin to plan for improvements, plan for new processing, plan for changes, plan for short cuts, plan for savings in materials, plan for savings in work efforts, plan for savings in time, and as a result obtain SAVINGS IN COSTS.

The Importance of Technological Process Planning

It is a fallacy and therefore wrong to scrutinize and select processing from the very start mainly on the basis of operating costs, prime costs for equipment, costs per unit produced, or any dollar and cent approach alone.

Process planning and process improvement must be closely coordinated with product planning and product program development, because only in this manner are processes or improvements selected that will help for a few years rather than for the immediate present. In large automobile plants, processes and machines can be changed every year or more often. In the small plant, a long-trend kind of process planning must be applied, which by necessity must be primarily technological in character and only secondarily conscious of costs.

It has been proved over and over that, if the technological planning and the operational methods improvements are done well, savings are much greater and costs per unit produced are much lower than can be achieved by any other kind of managing a process.

How to Plan Process Improvement

Methods engineering, methods study, and methods improvements are probably the most needed and most useful techniques to be applied in process improvement planning in the small plant, be its processes mechanical, chemical, electrical, or biochemical (food plants) or in any other field.

Hardly can the small plant manager change the *basic principles* upon which his processing is based, but he can consistently and persistently study if these principles are utilized and applied in the best possible manner and make such improvements as are feasible.

Hardly can the *equipment and the machinery* be changed very often, but efforts can be made to obtain continued best utilization and to apply such instructions as would give best efficiency of operation.

Hardly can a given process be revolutionized by *basic improvements in the specifications* on materials, operating details, tools to be used, heats required, chemical strengths of solvents, or any other detail which is important in the process. But there are always certain modifications possible, minor changes, which somehow yield more, save, and lower costs.

The *workers and the methods of work* which are prescribed for them are truly essential in any processing, but since most of the actual work is now done by machines and generated power, the men mainly operate the machines and do auxiliary work needed to keep production going and flowing. If these auxiliary operations are carefully studied, one usually finds quite a few and often very profitable cost-saving and improvement possibilities, although they are work improvements rather than process improvements.

The *points and methods of control* decide the reliability of the processing and the quality which is produced by the process. They should be studied over and over whenever any process planning is attempted, complaints are heard of, or sales drop owing to poor quality of the products.

Keeping the Processing Up-to-date by Planning

How to keep the processing in the small plant in line with the rapid improvements which are being made in all technological fields; how to get modern or at least some modern machinery; how to keep technologically progressing in order to avoid slow, stale, outdated, and inefficient processing are definitely among the most crucial problems in small plants.

Rather than modernize their processing and their plant, quite a few small plant managers risk going into bankruptcy or sell their enterprises. Others, however, visit expositions, read the advertisements in the technical journals, invite sales engineers to visit them, and thus keep in touch with progress at almost no expense. The equipment manufacturers, the technical editors, the sales engineers do the research for them, advise them, and often go far out of their way to help small plant managers to know about and to get the modernization which they may need and can use to advantage.

The only thing they cannot do for them is the planning necessary to decide which process improvements should be introduced, and when they

should be installed and tied in with the rest of the plant without too much upheaval, interruption, or trouble.

Process modernization which involves more than mere detail improving must be

1. Made a definite point of process planning
2. Worked out carefully in form of an improvement program
3. Backed up by funds gradually saved up for modernization.

All three requirements are difficult to fulfill where limited planning, a tendency to carry on as always, and expenses for "more pressing purposes" prevail. Yet there is no more important planning to be done in the whole complex of tasks which a small plant manager has to fulfill than the planning which keeps his processing up-to-date and thus producing at lowest cost.

MACHINE AND EQUIPMENT PLANNING

Machinery, equipment, and tools are the inanimate workers of our times, and the methods of using them are entirely within management's prerogatives. They do 90 per cent of all work; they do as told; they ask for no raises; they go on strike only if utterly neglected by the management. They are and should be made main objectives of planning. On the other hand, they usually require about one-third or more of all capital investment; they cost depreciation, wear out as time and use are applied, and thus are of prime importance also for these reasons.

Besides, it should be useful to remember in machine and equipment planning that most jobs are created by machines and that idling a machine also idles a worker. Installing a few more machines puts a few more members of the community to work. Idling of a few machines also idles a few members of the environment and affects their wives and children, their landlords, grocers, laundries, the bus line, gasoline stations, and other traders.

Machine planning means more than merely buying a piece of iron, setting it up in the shop, and operating it from time to time. Machine planning has highly important economic and human aspects.

The Know-how Rules of Machine Planning

Machines are made nowadays in such variety, in so many sizes, and with so many special features that to buy any one of them without a clear, definite plan on products, volume to be made, and process to be used for quite some time ahead is wrong management.

This is especially true for small plants, where every machine acquisition is an event not too often repeated. Therefore what machines to buy is of utmost importance. The latest? The very best? Larger than needed now? Just what is needed? Buy it new? Buy it rebuilt? Try a cheaper kind? Should it be standard type, a Universal, or an Automat? How about drive, accessories, spare parts, power, motor, tools, repairs, and maintenance? Who knows how to run it?

Hardly can small plant men be induced to plan their machine needs on the basis of formulae, logarithmic diagrams, and finely calculated costs per unit made. Each manager should buy only what he knows he needs and what he can use for some years ahead. He must aim to buy a make which is known to be good and which some worker knows how to operate. Machine quality is at a premium, and it pays dividends in form of reduced trouble. It is not time study which gets the most out of the worker, but the volume of production comes from the performance that is made possible by the construction of the machine. And knowing this, the small plant managers must aim to plan with machine know-how, foresight, and reasoning rather than with reliance on estimated costs alone. Or they will build their own machines with the same thoughts in mind.

There is no scientific method which would be an infallible guide for machine planning and would fit all cases. Yet it does seem that there are quite a few time-tested points which have been used by many small plant operators that should help others in planning for their machine acquisitions, whether they consider standard machines or any other types or even old ones to be adapted to specific needs.

The Shopman's Points for Selecting Machines

Know-how shopmen always desire the following qualities in their machines:

1. *Best Basic Suitability for Doing the Expected Kinds and Varieties of Work:* Invariably this is the main point which the practical shopman stresses. Since a product always has to be made to fulfill certain designs and specifications, only those machines are worth having which help in making the products with greatest directness of work, in a minimum of operations and setups, and of the quality of work desired in the specifications. A machine that is too good for achieving a certain quality is just as undesirable as one which is not good or accurate enough.

If a long-trend product program has been planned, such planning can also be translated and applied to long-trend machine planning. In this

manner not only immediate needs but also probable future changes can be considered in selecting single machines and the entire machine compound; money can be invested most wisely and economically for years to come.

2. *Performance and Flexibility:* Performance means in shop language the desired volume which will have to be done on any one workday. Flexibility means adjustability to ranges in workpiece sizes or work variety as well as to changes in daily volume requirements.

Again, long-trend sales and product planning will help in making a better machine selection and longer lasting suitability of the machine compound, and more money can be saved by not buying what would not suit for at least some years ahead.

3. *Accuracy of Work:* Accuracy of work not only is obtained by the operator but must be available in the construction of the machine. Long-lasting accuracy in a machine depends on

- a. Rigidity of design, sturdiness in the essential spots. The parts which transmit the work energy or hold moving elements must be of good material and precise engineering design to remain in alignment with each other and under all operating conditions (speeds).
- b. Workmanship built into the machine itself. Good workmanship in the essential parts increases machine life and reduces troubles, breakdowns, and down-time losses. Accuracy in work can be obtained only if it is provided for in form of accurate and most careful workmanship in the essential parts or sections of the machine.

4. *Simplicity of Construction:* No machine is really simple, even if it consists of a minimum of parts. The simplicity which is looked for is relative or comparative simplicity and directness of design in the parts as well as clear subdivision of the sections, so that they can be taken apart and re-assembled with relative ease. Accessibility of the work section, good placement of levers and switch buttons, absence of protruding parts or bulges, intelligent arrangement and encasement of free-swinging or rotating parts are always points in favor of a machine.

Simplicity of design always means compactness, practicability, and operability without acrobatics by the operator; good work visibility from almost all positions; absence of grease- or dust-catching corners and grooves; and intelligent arrangement of drives and transmission mechanisms.

5. *Reliability of Operation:* Most machine breakdowns are caused by defective or inefficient lubrication. Others are caused by unreliability in the electric or mechanical operating devices, in the starting and stopping phases, and still others by the use of too much energy or power in a machine that was not built for it. The kind of energy which is used and how it is transmitted to the working tool or spindle are always worth checking. Proper table height and other design features aiding the operator in his motions and saving unnecessary efforts are always desirable, just as overavailability of not really useful gadgets or overrefinements are undesirable. The possibilities of corrosion, the quality of bushings and bearings, and similar important points should be considered and checked.

6. *Ease of Maintenance and Repairability:* A machine which needs special repair service or time-consuming factory attention every time it is out of order is definitely less desirable than one which can be serviced, maintained, and repaired by a trained worker of the plant. Any design is undesirable which causes cumbersome work in dismantling and replacing or which involves too much housing, too long gear trains, complex clutches, fancy transmissions, weak bushings or bearings in locations hard to get at, etc.

At all times the possibility of cleaning and lubricating the machine will be of great daily importance. Draining facilities for coolants and chip pans, too, should be easy to handle and to clean.

7. *Low Installation Costs and Possibility of Removal:* In the small plant and also in large plants machine installation without foundations or special connections has become a feature desired by practical men. Improved frame designs and increased rigidity built into the machines are available today in many makes and models, so that such machines can be set up on level and even on imperfect floors without loss of work accuracy.

Foundations cost extra money, impede machine and flow layouts, cause transportation troubles, and always create fixed points in the shop which are difficult to change and costly to remove.

What is true for foundations is also applicable to overhead installations, to unusual or special floor-space needs or floor installations, special electric connections, and similar features. Floor space is always at a premium.

8. *Safety:* In scrutinizing the safety aspects of a machine, every shopman knows that nearly all manufacturers give attention to it and provide for safety in their designs, since they must fulfill all safety codes and underwriter regulations. Nevertheless, there are as yet no foolproof machines, and where there are more than the usual danger points and additional pro-

tective devices will not fully correct the dangers, it is best not to buy such unsafe machines.

9. *Proper Appearance:* Machines reflect the mentality of their designers as well as of those who select or buy them. Some designers stress design, neatness, lines, harmonious appearance, finishes, paints, and arrangement of the operating wheels, handles, or buttons. Others do not care, nor do they consider how the operator feels in operating the ugly monster.

No shop manager can overstress machine appearance, but the best ones always aim to create a neat-looking shop, because this makes going to work easier, keeps things humming better, and takes the sting out of even hard work. Neat machines also invite neatness in the man; they are better taken care of, therefore break down less often and last longer.

10. *Space, Weight, Height:* In the modern one-story building these points are possibly not so important as they are for machines to be located in multistory buildings, remodeled premises, or light structures. The better the work flow desired, the closer to each other the various machines must be located, and therefore, the floor-space needs and the weight of each machine should also be studied in combination with its prospective neighboring machines.

Height is needed for overhead monorails, magazines, storage, or office space, and thus machine heights which impede future installations of this kind are less desirable than those whose construction and height permit such changes or installations as will help to produce more within the same plant or cubic space.

11. *Reasonable Price and Investment:* No machine is worth its weight in gold, but any good machine is worth a "reasonable" price, even if it does not "pay for itself" in jig time. Not all machines can save money in such an ostensible manner.

Good machines cost good money, and it is always unwise to save in initial investment and pay later for repairs. The savings must start with buying the best suited machines based on most intelligent and future-minded selection planning and must be continued through most careful daily machine-use planning. In this manner even with limited funds a most effective machine compound can be created and costs obtained which help to improve any company's delivery and reputation for good quality products.

At no time is it good know-how management to use the price of a machine alone as the basis for appraising it. Machines must be selected for technical suitability, design, and workmanship. There is no formula by which this can be done.

*The Most Desirable
Machine Compounding and Coordination*

If the above points are considered for every machine, the small plant can be made a *carefully balanced process and production unit*, where there are just those kinds of machines and sufficient machines of each kind so that all the desired products can be made in such varying daily volumes as are anticipated. The same flexibility of production and flow can be achieved throughout, in every process phase and for every operation. In such an arrangement product planning and process planning are further strengthened by good machine planning.

The balanced plant, as described, is undoubtedly the best kind of small plant that can be created. It can be operated with highest efficiency on the strength of its machine availability and with uniform flexibility. Bottle-necks are avoided, and if the machine layout is well done, further improvement in work flow can be obtained with a reduction in paperwork or ticket writing. A plant of this kind can also be much better adjusted to economic changes, and this represents the ideal at which to aim.

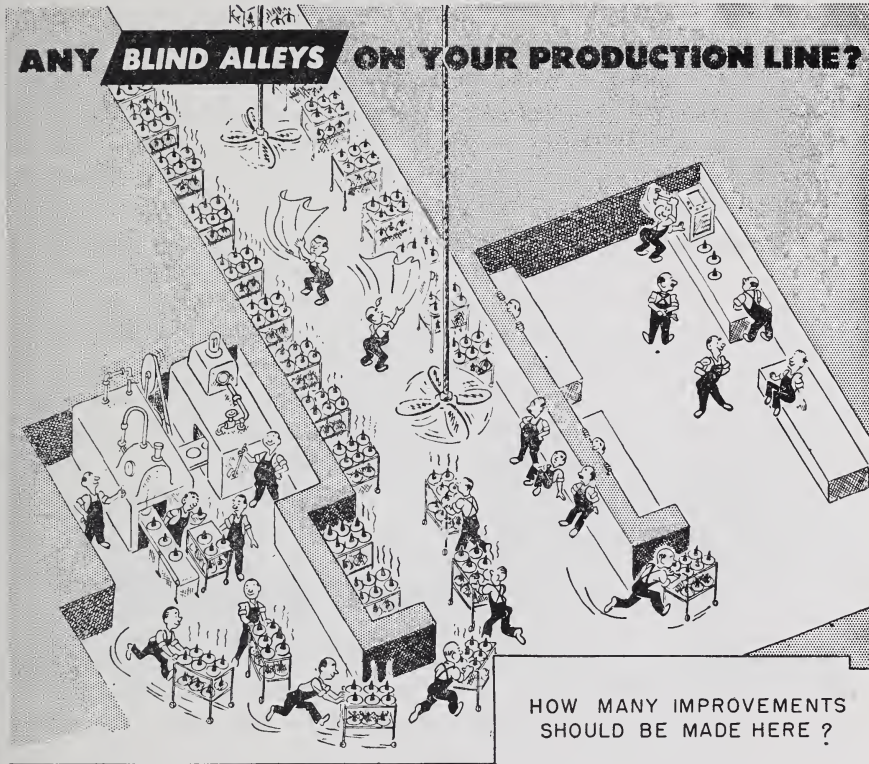
Sectionalization of like kinds of machinery may be necessary in the larger plants, but in small plants any kind of segregation or special section forming that would muddle the work flow is always undesirable. Segregation and special machine sections are the crux of big plant operations. They tend to create special workers' groups, who consider themselves as different from all others, develop their own work habits, often cause special wage demands and possibly union troubles.

In creating a balanced plant and a nonsectionalized machine compound, in which each machine is made part of the daily work flow, one creates also the machine prerequisite for *specialized production*, which for many small plants is the most desirable and lucrative kind of production. Especially during the war it was found that small plants of this kind were the most desirable suppliers, and with increasing competition the specialized small plant is bound again to lead in achieving the lower costs so essential for survival.

There are, however, also small plants that by purpose or necessity must form machine compounds for the achievement of *diversified production*. They, too, can and should aim to create a balanced plant as best they can. While not every machine may be used daily in any regular work flow, all machines should be selected and laid out so that they all are direct and equally important parts of the whole plant.

Coordination of men, teamwork, and mutual consideration are not created by posters, pamphlets, or manuals, but they are greatly aided by proper selection of machines and by compounding them into one carefully ar-

ranged work unit, where no one can lag behind, no one need to outshine the others, and all combined fulfill the plans. To make each machine and each man a continuous part of the whole production process is the best know-how machine management.



(Reproduced with special permission of J. W. Greer Company.)

Machine Integration Versus Paper and Ticket Systems

No one who wants to manage well can eliminate all paper work, but he will always aim to keep it at a justifiable minimum. Good machine planning and careful machine compounding are excellent means toward reducing paper work and ticket writing.

In jobbing work, where every product is different, the small plant and the big plant, too, will have to do considerable paper work to route the work properly and determine true costs per piece.

But if there is at least series production or repeated similarity of production in the daily pattern of work to be done over more or less distinct

periods, good machine selection and careful sequence layout of machines and equipment can greatly simplify the paper work, reducing it possibly to one daily work-order sheet to the foreman. Costs may not be so correct for each different piece if product groups and complete machine compounds are considered in work ordering and work costing, but it does seem that the superaccuracy at which some paper-work systems aim is not always needed in the small plant.

If machines are laid out in proper sequence, the flow becomes more direct, and repeated handling, a most costly and undesirable feature, is reduced. The common belief that good and efficient machine layout can be planned only for the big plants is now being rapidly dispelled by the establishment of many small but excellently laid out plants through which the large companies aim to achieve at least some degree of decentralization.

The small plant manager who tolerates many interrupted work flows and still aims to overcome delays and unnecessary handling through ticket systems, tags, and scheduling boards certainly fails to avail himself of the much more effective flow techniques which can be created through a careful study and a better arrangement of the machine layout and possibly of the plant.

The picture on page 131 shows what happens where machine planning and machine layout are not given proper attention.

PLANNING THE SMALL PLANT PREMISES

For Those Who Can Afford or Need Their Own Plant

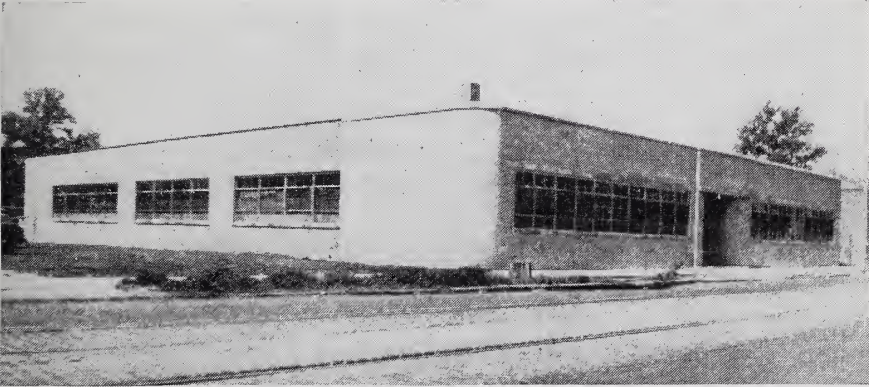
It happened only a short 30 years ago that Albert Kahn, the famous plant architect, suggested that also in the mechanical industries a building should be and can be made an integral part of the production scheme. He claimed that the premises made of cement, steel, and bricks could be made to do part of the work. Since then industrial-plant-construction firms have designed not only hundreds of large factories but also thousands of small ones that actually do part of the work by virtue of their design, which saves unnecessary work, expedites the work flow, and avoids any obstacle that would cause extra handling, extra transportation, extra storage, and extra cost. In brief, plant designs are now available that through their layout, arrangement, and installations assist the work group to avoid any wasteful management that can and should be avoided.

The best known type of this kind of waste-saving plant is the "flow plant," usually a one-story structure, in which production areas, assembly and packaging space, storage rooms, receiving and shipping facilities, aisles, doors, pillars, windows, installations, and electric or other power facilities are so arranged that they almost enforce a best work flow, best machine

layout, and quickest uninterrupted movement of the entire work scheme. The savings created by these flow plants are often astounding. They help the management to improve its competitiveness and give to the workers a plant with working conditions far superior to the older types of plant designs, which aimed merely to provide some sort of low-cost housing for the work processes, machines, and men involved.

The manager of a small plant who can afford or who, owing to the peculiarities of his production, needs a plant of his own should in his basic management planning by all means investigate the possibilities of using one of the new flow-plant types, or at least he should try to improve whatever plant he now has along the lines of new labor-saving and cost-saving plant designs.

The picture presented below shows a typical new type small plant, owned by the Nu-Trishus Products Company, Chicago, Ill.



A modern low-cost, one-story plant, the Nu-Trishus Products Company, Chicago. For floor and flow layouts see p. 138 [*Reproduced with special permission of Food Industries (December, 1948, p. 77).*]

The Advantages of a Modern Flow Plant

The modern small plants are purposely made one-floor plants because it was found that continuous work flow can be arranged at lowest costs by avoiding any kind of lifting. Besides, the entire building and floor space can be best utilized. One-floor plants actually furnish best space and transportation economy and are less costly to build than two- or more story plants.

One-floor plants also permit expansion at a minimum of costs if sufficient ground is provided for this purpose; even walls, electric networks, pipes, drainage, and any other installations are mostly designed for economical expansion. Also appearance can be obtained by the effectual use of building materials rather than by costly ornamentation.

If the design is properly conceived, a small plant can be started, not with a minimum, but with a best spent investment for plant, and it can be expanded as success and increasing operations require.

Besides, the modern one-floor plants create industrial sections entirely different from the drab, unfriendly, and by now neglected-looking industrial districts of earlier decades. Mostly located on the outskirts of the community, dotted with grass plots, easily accessible by bus lines and good roads, and surrounded by low-cost residential sections, they give to a community that friendly appearance and quiet look of prosperity which are so much in line with the dignity of work and manufacture and correspond to the best concepts of modern industrialism.

The Undesirability of an "Old" Building

Available garages, stables, old lofts, and similar structures are often considered as cheaper alternatives for housing small plants, but since they were not built for manufacturing, they are rarely well suited for installing machinery and equipment and therefore are doubtful acquisitions.

The old building usually has unsuitable floors, weak electrical installations, bad roofing, and columns, walls, stairs, freight elevators, doors, entrances, and outlets where they should not be or where they are a hindrance to a good production flow.

To rebuild or renovate an unsuitable structure costs in the long run more than a new one, although the first estimates may be much lower. There are always additional walls or pipes to be removed, drainage to be provided, or plastering to be done in most of the building or at least painting or roofing repairs and rain pipes to be installed, all of which increase the first costs.

Lighting and sanitary facilities are mostly poor in old buildings, and renovations are rather costly and hardly worth making unless the old structure is exceptionally good and justifies the cost of the improvements.

The widespread custom of letting the small plant deteriorate until it looks definitely dirty, dilapidated, and uninviting is hardly beneficial for the management, in so far as the better class of workers will not seek employment there, and customers will hardly feel inclined to visit often and place increasing orders.

Good plant appearance can be created with relatively little effort and cost and should be definitely planned for as part of top-management planning as long as a building is available, is needed, or is desired for the small plant. Such planning not only pays in terms of more output and lower costs but also brings about more happiness, better morale, and better management-employee relations.

Rented Plant Premises for the Smaller and Smallest Plants

Where no special building is needed for the small plant or where funds are limited and have to be used for other things, renting is always preferable to building.

Generally, there are special buildings in nearly all communities where space can be rented for the small plant, and with the help of a reliable real-estate agency nearly every kind of manufacture can be housed satisfactorily, in desirable surroundings, in desirable up-to-date buildings, and at reasonable costs. There is no need, nor is it advisable, to rent in the "dumps."

Renting not only secures plant space that can be studied most carefully before the contract is signed, it also relieves the plant manager of many troubles and detail work which building maintenance, taxes, unions, and service procurement entail.

The Port Authority building, the garment center buildings, and many others in New York; the terminal buildings in many towns; and special industrial buildings everywhere provide ideal workplaces for many small manufacturing companies. If all costs of renting are compared with the costs of owning a plant, it will be found that not only the capital expenses for building but also interest and expenses and a considerable amount of extra costs and extra work are saved which can be applied to the more urgent task of managing.

How to Plan Plant Space

Aside from the strictly technical requirements which have to be thought of when building or renting plant space, the small plant more than the big plant requires most careful planning and consideration of

- | | |
|----------------------------|-----------------------------------|
| 1. Immediate space needs | 4. Avoidance of excess capacity |
| 2. Near-future space needs | 5. When to build and expand |
| 3. Long-trend space needs | 6. How to retrench and liquidate. |

Much too often plant space is created or rented without due and most careful consideration for present, near-future, and long-trend needs. Especially when renting space for a new enterprise, very often space has to be rented as it is available, and it may be either too much or too little. Or plant space is obtained on overoptimistic expectations, and then not only a rent-cost problem is created—because rent is bound to be higher than it need be—the high rent also keeps the cost of products higher than necessary. With too much space available, there is farther transportation than necessary and a definite tendency to pile up more materials and products than would

be justified by really good management. Costly space is thus made even more costly and inefficient.

The counterpart to this is the crowded and overcrowded small plant. True, very few small shops are crowded from the start, but many soon become crowded when no space for expansion was anticipated and additional machines have to be pressed into the same space. The overcrowded shop is even less desirable than the overspacious plant, because transportation and good work flow become well-nigh impossible and workers crowded too closely not only talk more and work less but also are in greater danger of accidents.

In planning plant space, therefore, it is extremely important to consider from the very beginning

- a. *What maximum volume can be produced with the selected machinery*
- b. *What maximum volume of sales may possibly be obtained in a few years ahead.*

Not always is it necessary to provide additional space and machinery in order to achieve a certain increase or more variety. If truly good machine planning has been applied, little or no excess space should be needed for quite a few years. Even when a considerable increase in production may then have to be handled, a careful regrouping and rearrangement of the production flow in combination with methods improvements may well give a faster and thus adequate volume of production within the same space. The need for excess space, or as it is usually called "space needed for expansion," is not always so necessary as is generally assumed.

Modern industrial engineering, which actually is merely most intensified common-sense thinking and application or development of more effective technical and management methods, has actually succeeded in turning out double, treble, and even quintuple production in the same space, which should prove that operating techniques might well be thought of before more space is acquired.

In industries, however, where no such improvements of work methods and work flows are possible, space for expansion should be provided; in most cases 25 per cent more floor space than needed at the start should go a long way toward covering increased production needs. There definitely is no advantage in providing more, except for very convincing reasons.

Avoidance of Excess Capacity

The most common method of calculating the required space capacity which should be provided for work areas and machinery simply calculates the probable maximum daily sales or production that are expected to be

needed during the current, next, and third year; then the daily maxima are translated into machine requirements and these into floor space. Nearly always these future requirements are expected to be bigger than the present ones, since nearly all forecasters invariably expect the future to be better and bigger than the past.

Under normal conditions this may well be. But there are times and occasions when this technique would provide a most dangerous overcapacity. Recessions and declines in demand are serious enough for the small plant, but they have to be anticipated especially carefully when it comes to machine- and plant-space planning.

Excess capacity can be avoided at least to some degree and in some industries by planning daily production and sales in such a manner that at least some of the additional peak volume will be made and sold ahead of the time of peak demand or by planning such periodic additional product manufacture which in slack times would even out the work load and create a fairly uniform production and plant use throughout the year.

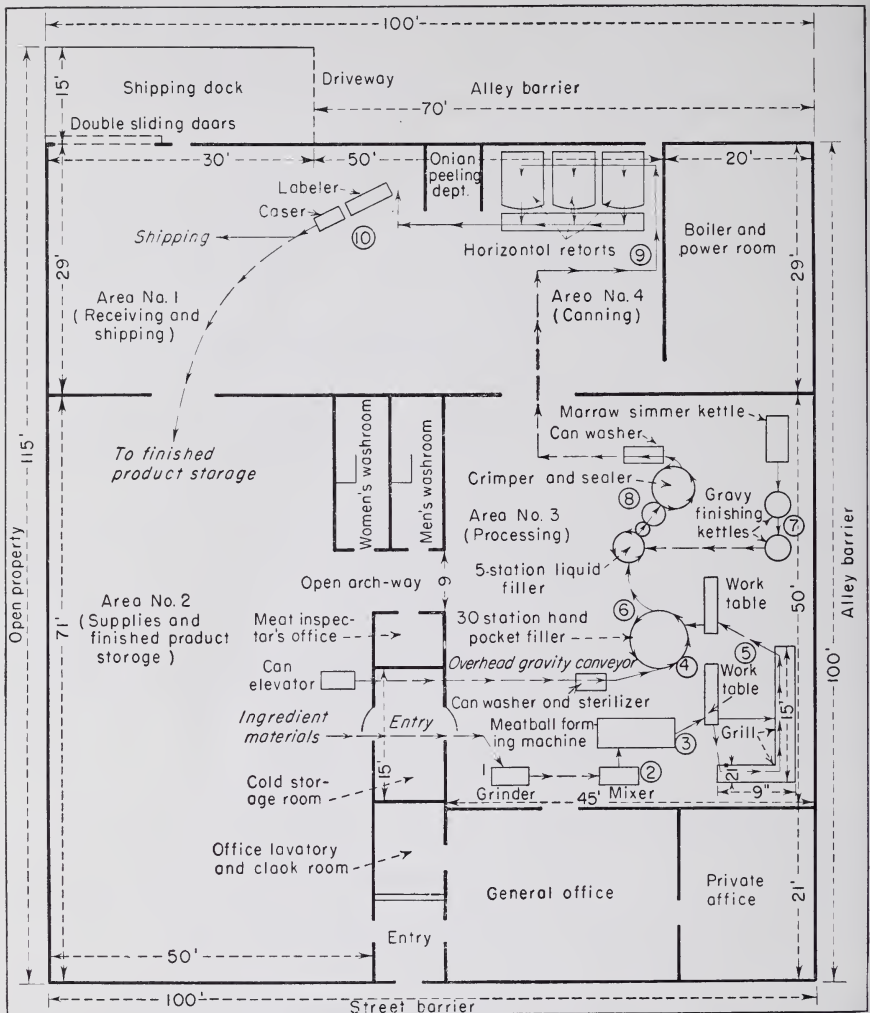
Efforts at such planning, which aims to overcome the seasonal cycle during the year, can and should also be directed to level out the business cycle which now plagues many industries. Such planning is very important not only for avoiding excessive provisions for plant and space but for obtaining a more steady progress, steadiness of employment, and thus a more steady development for the plant, the community, and the economy.

When to Build and Expand

It is hardly good management, but one can well observe that the largest as well as the smallest enterprises build and expand when prices for construction materials are highest, supplies are scarce, and owing to the general trend, the building trades ask highest wages. Obviously, the total cost of such boom expansion is the costliest that one could choose.

Expansion in slack times generally costs much less, and the work done by the contractors is much better. Therefore, expansion during business recessions should be an important point to be kept in mind in small plant planning. The small plant management, in particular, should be interested in low-cost building, since with the same amount of money it can provide a larger plant or some plant expansion and more machinery or replacements and possibly other improvements that cannot be created when prices and costs are highest.

Slack times and periods of reduced business generally induce managers to delay for better times, and thus they forego the advantages of low-cost building and expanding. But this mainly is done because they have failed to plan and merely followed current trends rather than long-trend foresight.



Single-floor, readily expanded layout. (Reproduced with special permission of Food Industries.)

The best method of planning plant improvements and expansion during recessions combines building changes with the introduction of one or a few new products and processes which are bound to round out and improve the product program and add new possibilities for sales. There should always be at least a tentative "depression plan," which would be taken up more seriously as times get worse.

Naturally, no expansion can be undertaken unless it has been provided

for while things were going well, and again it is proved how closely and importantly all management planning, organizing, and operating are interlocked.

The layout plan on page 138 shows the interior of the Nu-Trishus Products plant, the use of up-to-date equipment, the well-arranged flow layout, and sufficient but not excessive space provided for expansion. Its flexibility permits 100 to 150 per cent increases in production and doubling of the number of employees without adding more equipment. Further interesting details are described in *Food Industries*, December, 1948, pages 77-82 and 217.

How to Invest in Building and Plant

Best off are those managers who do not have to invest their own or borrowed money in plant facilities, grounds, or services. In this case they can buy more machinery and better equipment or can conceive their entire operating on a somewhat larger scale than they could with a considerable part of their funds tied up in buildings and with some of their revenues drained for interest payments and loan refunding.

TABLE 2. UTILIZATION OF \$100,000 CAPITAL IN AN ENTERPRISE

| <i>A. With Own Plant</i> | | <i>B. In Rented Premises</i> |
|--------------------------|----------------------|------------------------------|
| \$ 2,000 | Cash | \$ 2,000 |
| 5,000 | Credit in banks | 16,000 |
| 8,000 | Accounts receivable | 8,000 |
| 5,000 | Raw-material stocks | 8,000 |
| 5,000 | Product inventories | 8,000 |
| <hr/> \$25,000 | <hr/> CURRENT ASSETS | <hr/> \$42,000 |
| \$10,000 | Land | |
| 40,000 | Buildings | |
| 20,000 | Machinery | \$48,000 |
| 3,000 | Equipment | 6,000 |
| 2,000 | Tools | 4,000 |
| <hr/> \$75,000 | <hr/> FIXED ASSETS | <hr/> \$58,000 |
| 100,000 | TOTAL ASSETS | 100,000 |

The small producer, especially in the beginning, will always find the renting arrangement more in his favor. The contractual obligation to pay the rent weighs less heavily than the danger of foreclosure and loss of the plant if he should be unable to meet his payments.

Those, however, who do not need a plant should still make sure that they have sufficient funds so that they can plan and actually provide also for material stocks, open accounts receivable for deliveries made to but not

immediately paid for by the buyers, and for at least some cash and credits in the bank to meet emergencies, material bills, and wages.

Table 2 on page 139 shows approximately how \$100,000 of capital would be used in a small manufacturing enterprise with a plant of its own and in another which would operate in rented space.

Obviously, no schematic of this kind can suit all conditions and every kind of small plant planning, but even with due allowance for approximations, it should be evident that the enterprise located in rented premises has a stronger and more assuring capital distribution. It can stand strains and temporary reverses better than the enterprise owning its plant.

If one reads these figures more attentively they show further that

A and B must keep about the same amount of cash on hand

A and B both will be welcomed customers by the bank, but

B will be considered a better credit risk, because his assets are more liquid

A and B have to extend about the same credit, equal to 1 month's sales, to their customers, but

A has less materials and stocks, and thus is not quite so safe on making actual deliveries as B

A has from the start an annual fixed depreciation charge of \$6,300 (10 per cent of \$40,000 and \$20,000 and \$3,000) while B needs to include only \$5,800 into the costs of his products

B probably will turn out more and also better quality products with his greater variety of machines and tools.

If all these aspects are fully considered, it does seem that plant ownership—like all earthly possessions—and planning for it are more for those who have achieved at least some security in their field, while renting and its kind of planning are the more careful kind of management planning which the newcomer and the struggling small plant should prefer.

LOCALITY AND ACTIVITY AREA PLANNING³

Choosing, selecting, and planning the best locality for the small plant also are of much greater importance for the small plant than for the big corporation. The large company can make corrections, but the small plant, from the start and for years to come, must seek its fortune in the locality where it is established. It must get from there its employees, business, sales possibilities, suppliers, materials, transportation, credit and banking, advisers, supporters, and friends. From the locality, however, often enough come also operating difficulties, troubles, wrong advisers, and implacable enemies.

³ See also Chap. 3, *Community Progress Created by Small Plants*, pp. 29 ff.

Planning for the locality where the small plant should be located and planning the activity area within which it is expected to operate by making sales and buying its materials and supplies are most vital tasks of the manager. Mistakes and wrong decisions are very difficult to correct, and any disadvantages caused by the wrong choice are bound to last as long as the small plant is in existence or as long as it remains in the locality.

Moving a plant is undesirable and difficult. It would have to start all over again and the necessary changes are mostly impossible to bear or too costly. Therefore, small plants are generally compelled to remain in the same location (street, building, section) of the town where they started, and although it does happen often that the environment changes for better or worse, the small plant usually stays where it was founded.

For these reasons it is also doubly important to be circumspect in planning not only for the locality (city, town, village) but also for the plant site (section, street, building). Hardly is it wise to start somewhere without proper regard for the present and probable future character and development of the city and of the immediate neighborhood. Wise planning will give early and most careful consideration to both.

Where to Locate the Small Plant

Location has been made the subject of most careful economic studies. By now quite a few theories have been developed and many factors have been listed which are considered by large companies in choosing locations and sites for their plants. Small plants, too, may be located after careful studies of

- a. Cost of materials as compared with various locations
- b. Cost of labor and availability of labor in certain locations
- c. Cost of power and availability of power
- d. Cost of water supply and availability of sufficient water
- e. Cost of plant site or rent in different locations
- f. Cost of construction or installations needed
- g. Cost of taxes as compared with various locations
- h. Cost of transportation for
 - Incoming materials
 - Outgoing products
 - Workers going to and from work.

All these factors are important, and the cost of transportation is possibly the most important of all, in so far as during the year and over the years freight charges add up to considerable amounts, either to the small plant or

to the customers who have to pay the freight and naturally avoid buying from plants in such costly locations.

In spite of all theories and cost considerations, however, small plants have been and probably always will be located in places, sections, and buildings which from careful study would not have been chosen, and in spite of their poor locations many small plants have grown into respectable size and even large establishments. A good or best location in itself is no guarantee of success, just as a poor location is not always a cause for inevitable failure.

At all times, however, a good and carefully chosen location will be an asset and help in managing, while a poor location will always be a drawback that will have to be overcome by extra efforts in management.

Location planning which follows the preference of the manager and suits above all his own liking is therefore by no means undesirable. But in order to succeed with his choice of location and all his efforts in managing, it seems that

- a. Knowing the locality and its characteristics
- b. Knowing the people and their characteristics
- c. Knowing at least some of the important personalities

are prerequisites which no one should overlook in locating a small plant or in planning a change in location. Costs change, often considerably, and location disadvantages can be offset by better methods of operation. But localities, people, personalities, and their characteristics, habits, and attitudes change little or only slowly over the years. Besides, proper consideration for

- d. The kind and quality of the products made
- e. The need for the products within the neighboring area
- f. The prices at which they are offered

definitely helps to make a small plant a successful part of its environment and desired by the people. The small plant is part of its environment as much as the large plant and possibly more, and "how well it fits" into its surrounding must be most carefully planned and "worked for."

Personal contacts of the manager of the small plant with his environment and its people are of greatest importance. He must be or aim to become part of their community. With such an intention and with proof that he means it, he is bound to get the employees, business, sales possibilities, suppliers, materials, transportation, credit and banking, advisers, supporters, and friends which he and the small plant always need or whenever they need them.

A small plant whose owner or manager is constantly at loggerheads with his environment is badly located and badly managed, no matter how good may be its products, processes, machines, and plant and regardless of how wide a market area it may be able to cover.

Planning the Activity Area

The activity area of any plant is not limited to the ground or floor space which it occupies or to the city or section which is its immediate neighborhood. Under certain conditions even a small plant can and should extend its activities over a large activity area, from which it may draw its materials and where it may sell its goods. This, too, a small plant manager should keep well in mind in his planning if he desires to grow and to prosper.

The products made determine the activity area that may be chosen. Whether bread and rolls are made in a big plant or in a small shop, they must be shipped from the plant and sold within a nearby area as fast as possible, because they become stale and hard if shipped a long distance. Fancy leather bags and costume jewelry, however, can be sold throughout the nation from a big plant as well as from the smallest plant and even in foreign areas if this is desired.

The characteristics of the products; their size or weight; their high or low quality; their prices per pound or cubic feet of space; the resulting costs of transportation; the necessary frequency of contact with the buyers, daily, twice per week, or only once a month or year; the kinds and volumes of materials needed—all these determine the size of the area which is needed to operate successfully. The activity area should be chosen well and carefully appraised before a plant is definitely placed in any one location.

Besides, there are by now some *economic and social features* which should be checked so that they are not overlooked in planning: the availability of suitable labor in the locality, the kinds of unions with whom one may have to deal, the municipal government and taxes that prevail and how they may change in the future, the attitude of businessmen who may be for but may well be against the small enterprise in general or in particular, and the kinds of health, religious, school, and police conditions that may have to be encountered.

The locations of the prospective materials suppliers, the available transportation facilities, and the location of the prospective customers, too, are most important factors to be considered from the very start and in all subsequent planning. Quite definitely they do influence the costs of products and the reliability of inflowing and outgoing deliveries, all of which may contribute to or may impair the flawless operation of the plant.

Nearness to markets is needed when perishability of the products prevails, frequent contacts with customers have to be made, sales in small quantities predominate, and materials can be bought only in small and smallest deliveries owing to limitation of funds.

Larger activity areas, however, should be thought of, planned, and worked for, even by the small plant manager, when the products have

specific quality features, are not perishable, and can be sold in larger transactions and materials can be bought in fairly good-sized quantities at any one time.

Both kinds of activity-area planning have possibilities for growth and success; one plant will grow with its neighborhood; the other will grow with its area. But in both instances the plant which is located so that transportation costs for outgoing and incoming freights are lowest will have a permanent advantage over any other. The number of people living in any one spot or area is no guarantee of success or a reason for failure. It is the kind of people one should look for, their skills, activities, and the needs stemming from them.

A complete area survey might cover the following points. They were listed by the U.S. Department of Commerce.⁴

*Check List of the Major Types of Local and
Regional Information*

1. Historical sketch
2. Location
3. Population
4. Materials required by industry
5. Power
6. Industrial development
7. Labor situation
8. Employment and unemployment
9. Consumer purchasing power
10. Living costs, standards, and conditions
11. Construction and real estate
12. Wholesale trade
13. Retail trade
14. Buying habits of local consumers
15. Service establishments, hotels, and places of amusement
16. Transportation facilities
17. Public warehousing
18. Banking and finance, insurance
19. Professional services (physicians, dentists, lawyers)
20. Newspapers, radio stations
21. Expositions, fairs, and conventions
22. Industrial and commercial associations
23. Universities and other educational institutions
24. Federal, state, or county government establishments
25. Summarization of pertinent state and local laws and regulations
26. Municipal administration and related data

⁴ *Outline for Making Surveys*, Commercial, Industrial, Community, Regional, Local Economic Series No. 34, Washington, D.C., Government Printing Office, 1944.

27. Civic, social, and related facilities and activities
28. Important physical facilities and special features not elsewhere described
29. General statistical recapitulation.

SUMMATION ON PLANNING

Planning is the first step toward successful know-how management, and therefore it is the first and foremost task of the manager. As has been shown, it hardly can begin with financial calculations, cost diagrams, and premature thoughts of profits. Industrial management has to deal with six fundamentals which simply have to be planned first and well if any hope for profits is to be justified.

1. *Product planning* has to think up the best product or product program which can be made with the available knowledge and resources, and both have to be constantly improved to meet the ever more exacting needs and progress of our times.

2. *Sales planning* has to investigate the probable volume of sales to which the products may possibly attain, and it should aim to forecast sales not only for the immediate but also for a more distant future.

3. *Process planning* is easier to do because it is predetermined and directed at least to some extent by the two previous decisions. Still it is vital, because the best choice and improvement of the processes determine the achievement of best quality and costs.

4. *Machine-acquisition planning* is predetermined by all other planning, but it is needed to obtain best facilities not only at the beginning but at all times and best competitive strength not through lowest wages but through the use of best suited machines.

5. *Plant planning* may not be necessary in all cases, but where it is, it deals with the most costly part of the whole planning scheme, and more than the usual caution is needed to do this part of planning best.

6. *Locality and activity area* is needed to create permanent advantages and to avoid constant extra costs or other irritations. The right location can contribute just as much to the progress of the small plant as the small plant can contribute to the progress of its environment.

Only if location, plant, machines, processes, sales, and products are well planned and coordinated to be in best harmony with each other can the plant manager proceed with definiteness to his second task, which is the actual organizing and establishing of the physical elements that he needs to fulfill his plans.

CHAPTER 6

ORGANIZING THE SMALL PLANT

BY

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MEANING OF ORGANIZATION

When two or more persons combine their efforts for the achievement of a given purpose, they establish the fundamentals of organization. The desire to fulfill the purpose or to reach a common goal must underlie all associated effort if it is to succeed.

The actual formation of the group, the obtaining of the necessary facilities, and the development of methods for achieving the objective, all these combined create the organization.

If two men unite their strength to move an object that is too heavy or bulky to be moved by one, we have associated effort. When one man shouts "Heave!" in order that they both may lift at once, the association becomes effective through coordination, the primary principle underlying all organized effort. Thus, organization is the form of every human association for the attainment of a common purpose.

This definition does not mean that the objective or all the goals of human association are alike, for these are as numerous as the variety of human aims and motives. But in the creation of organization forms there are many points and features that are common to all. Therefore, before proceeding to the specific form with which this chapter is concerned, it would be well to discuss those characteristics which are common to all forms.

Organization has been defined as the "formal side of administration." Likewise, it has been called the "machinery of administration," the "channel"

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through which the measures and policies of administration become effective. Again, organization has been called the "framework" of every group moving toward a common objective. These definitions seem to imply that organization refers only to the differentiation of individual duties as set forth in the familiar organization charts. But duties must relate to procedure and action. It is here that we find the real dynamics of organization—in the motive power through which it progresses to its determined objective.

Organization, therefore, refers to more than the frame of the edifice. It refers to the organs that must be created and to their functions as they appear in action, to the physical elements that make up the organization, and to the very pulse and heartbeats, the circulation, the respiration, the vital movement, so to speak, of the organized unit. It refers to the coordination of all these elements as they cooperate for the common purpose.

IMPORTANCE OF COORDINATION

As stated before, coordination first appears in organization when one of the two men who are combining their efforts to lift a heavy object assumes authority and shouts, "Heave!" Here, then, we find the first principle of organization. Accordingly, coordination is the orderly arrangement of group effort to provide unity of action in the pursuit of a common purpose.

In referring to coordination as the first principle, it is meant that this term expresses the principles of organization in their entirety, nothing less. This does not mean that there are no subordinated principles; it simply means that all the others are contained in and necessary for coordination. All principles of organizing are combined in the means through which coordination operates in order to become effective.

It should be borne in mind that there are always two objectives of organization, the *internal* and *external objectives*. External objectives vary widely, according to the purpose or interest that calls and binds the group together, but the internal objective of the organization is always coordinative.

Coordination has its own principle and foundation in authority, the supreme coordinating power. Always, in any form of organization, authority must rest somewhere, or else there would be no directive for coordinated effort. The term "authority" as used here should not imply autocracy. Where true democracy prevails, the authority rests with the group as a whole, as in the government of the people of the United States.

Thus it is important to make a clear distinction between *authority* and *leadership*. Authority must come prior to leadership, for it is this coordinating force which makes the organization. Leadership, on the other hand, always presupposes the organization. There can be no leader without something to lead. Whatever authority is exercised by leadership is of necessity

a derived authority—derived from the supreme coordinating authority, whether vested in the people, in the stockholders, or in a monarch.

Just as vital is the distinction between *power* and *authority*. Power in the psychic sense, *i.e.*, ability to do things, is distinctly an individual possession. If one speaks of the “power” of an organization, it is inferred that this power has become collective through coordinated effort.

Authority, on the other hand, is a right. Hence we use the expression “moral authority,” and may say of some great teacher that he speaks “as one having authority,” meaning that he has a moral right to speak as he does. Rights cannot be divorced from duties, and if authority does not use its rights with due solicitude relative to these duties, it is sooner or later bound to fall. No organization has any prospect of stability if moral factors are not its basis.

Organized efficiency in the pursuit of an objective demands a *doctrine*, or *definition of the objective*. In religious associations this doctrine is based upon faith as formally stated in the creed. In industrial organizations it is the attainment of a “surplus through service.” The efficient application of the soundest doctrine demands, in turn, *organized discipline*. By this is meant something more vital than the discipline imposed by command—discipline of the “communality of purpose” of the entire group, the “group spirit.” The need for voluntary discipline is most evident in the problem of present-day management-labor relations in industry. With the development of international unions and industry-wide bargaining, the laboring force of individual industrial organizations has lost much of the voluntary discipline of common purpose with the management which is so essential to successful, efficient industrial organization and operation.

It is also essential to the concept of organization that there be a formal process through which the coordinating authority operates from the top throughout the entire organized body. This has been called, for convenience, the *scalar principle*. A scale means a series of step or gradations. In organization the “scalar chain” means the grading of duties according to degrees of authority and corresponding responsibility. This chain constitutes the process of coordination through which the coordinating authority obtains the desired effect. The scalar process becomes effective through (1) leadership, (2) delegation, and (3) functional definition.

Leadership represents authority, and it must possess the authority necessary to the exercise of that leadership. It must also project itself throughout the entire scalar chain, since the qualities of leadership involve more than the capacities of the organizer. As has been so aptly stated, “the leader must be everything that he desires his subordinates to become. Men think as their leaders think, and men know unerringly how their leaders think.”²

² General Charles P. Summerall, former Chief of Staff, U.S. Army.

Delegation is the process through which leadership makes itself felt throughout the scalar chain. It means the conferring of a specified authority by a higher authority. In its essence it involves a dual responsibility. The one to whom authority is delegated becomes responsible to the superior for doing the job, but the superior remains responsible for getting the job done. The principle of delegation is the center of all processes in formal organization. It is this principle, with its attendant responsibilities, which is most frequently overlooked or not carefully applied.

The problem of delegation in organized effort is as old as human history. When Moses chose able men out of all Israel he charged them to judge the people at all seasons: "The hard causes they brought unto Moses, but every small matter they judged themselves."

Functional definition is the form through which leadership delegates to each subordinate his own specific task. Thus it becomes the final end and aim of the entire scalar process. The clear identification and effective integration of functions complete the cycle of coordination in organization practice.

A SMALL PLANT ORGANIZATION CASE

Since a discussion of basic principles of organizing men must concentrate on the abstract logic inherent in the actions of men, it is difficult to illustrate these principles in practice. However, one might consider the case of a small plant engaged in structural-steel fabrication and employing 67 people. The organization chart for this company, which is illustrated on the following page, demonstrates a good, logical framework for its operation.

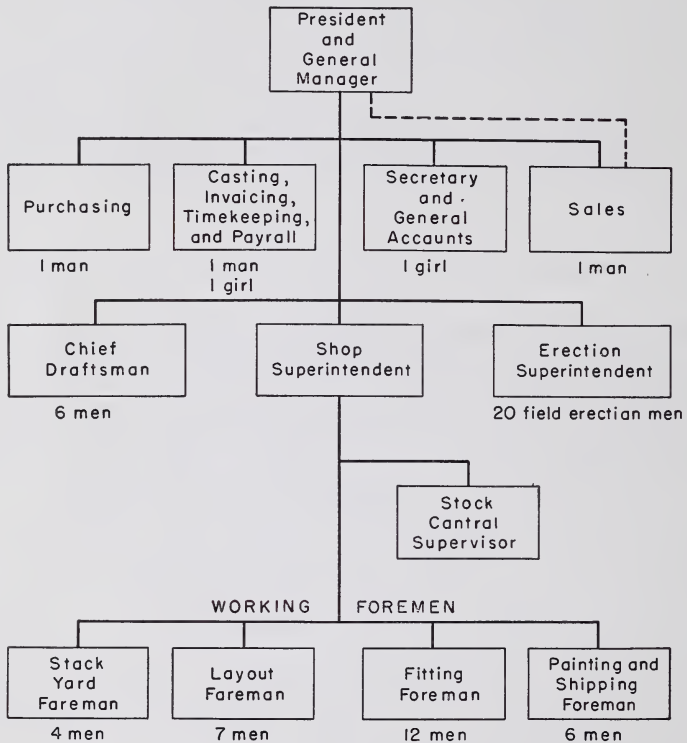
The president and general manager of this firm is known as a good organizer as well as an effective administrator, and his organization reflects good organization practice. The chart shows clear definition and separation of functions and a simple yet effective combination of tasks. It provides for all activities of the organization and yet holds overhead to a minimum. The manager recognizes the necessity for delegation of authority together with attendant responsibilities and yet retains a measure of the responsibility to himself for seeing that the job gets done.

To illustrate the consolidation and combination of functions in a small business, it is of particular interest to note that, in this organization pattern, the president and general manager takes a direct part in selling, sharing this responsibility with the single full-time salesman. Since in a business of this type outside contacts and direct selling are important responsibilities of the proprietor, he cannot entirely delegate them to another.

It should be noted that the section heads in the shop organization are working foremen, although in addition to doing part of the work they also

assume the responsibility of keeping the work moving through their sections, assigning jobs to their particular men, verifying time reports, approving supply requisitions, etc. By relieving the shop superintendent of these routine duties, they enable him to apply concentrated supervision to the progress of work throughout the shop. He also maintains effective liaison between the drafting room, the customer, and the shop, and he keeps himself free for immediate attention to the technical problems which arise with respect to processing and quality.

ORGANIZATION STRUCTURE OF THE X IRON WORKS
A Structural Steel Fabricating Plant



Such working arrangements are made possible by means of the small size of the operation, which enables the manager to maintain intimate contact with the day-to-day details of operating the business.

SCOPE OF INDUSTRIAL ORGANIZATION

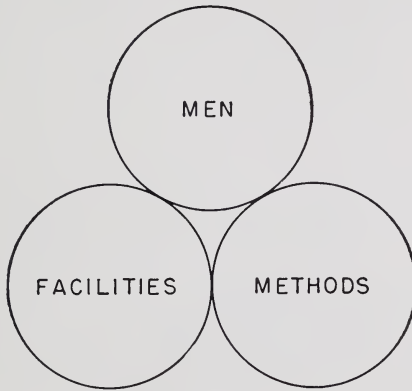
In industrial organizations the supreme coordinating authority is usually vested in the stockholders of the corporation. Authority is delegated by the stockholder group to the management group, consisting of the board of

directors and the group of elected officers who comprise the management of the organization. Hence the responsibility for organizing the efforts of the group devolves upon the management.

As indicated earlier, the purpose of industrial organization is the achievement of a "surplus through service." This manifests itself in the production and sale either of goods or of services.

In all industrial enterprises the organization consists of a combination of facilities, methods, and men. These are the basic elements. Each plays an important role in the execution of the purpose to which the organization is dedicated. Undue emphasis upon any one of the three elements will not be conducive to effective coordination; thus each must be considered in light of the part that it plays in the entire organization body.

THE BASIC ELEMENTS OF
INDUSTRIAL ORGANIZATIONS



COORDINATED THEY FORM THE
BODY OF THE ORGANIZATION

In certain types of industrial operations one or another element may obtain additional emphasis due to the nature of the enterprise. For example, in continuous process manufacturing of such products as chemicals, paints, paper and pulp products, facilities are emphasized over the men and the methods which are used in producing the goods. With recent developments in scientific control of processes it now is possible in many industries to set up the plant facilities in such manner that raw material goes in at one end of the plant and finished goods come out the other. Coordination is built into the plant facilities.

In all industrial organizations, however, no one of the three elements—men, facilities or methods—can be neglected, even though there may be varying degrees of emphasis upon the individual components of the organization.

ORGANIZING THE MEN

Since an organization is an association in which individual human beings are bound together in a common purpose, coordination of the efforts of these individuals becomes one of the primary responsibilities of the management of the industrial enterprise. Management is responsible for choosing men who will work together and who will keep in mind at all times that theirs is a cooperative enterprise. Each must contribute his share if the venture is to succeed. Thus a clear expression of the policies and purposes of the organization is all-important to successful operation.

In a large organization much of the coordinating effort is carried out by committee action in which individual specialists in the various fields of activity are brought together for the purpose of discussion and decision. In a small organization, where the refinements of specialization and committee action are not practicable, the problem is simplified. Many difficulties on the human side of the organization problem can be overcome (1) if the men to operate the organization are chosen with special regard for their ability to cooperate in a common enterprise, (2) if there is clear and specific delegation of responsibilities and authorities throughout the scalar chain, and (3) if there is a clear and precise definition of functions.

Many specific techniques have been evolved utilizing organization charts, job write-ups, etc., to simplify the task of management. However, these techniques must be recognized as only tools for organizing. Real coordination can be accomplished only by personal contact throughout the organization and by leadership that makes itself felt and expresses itself clearly in all contacts with all members of the organization.

ORGANIZING THE FACILITIES

Recent technological developments in machine tools and automatic-processing equipment have made possible a high degree of technological coordination. This achievement has gone far enough to show that an increasing segment of industrial production can be brought into the area of greater integration of machinery and continuous-flow line production, so that the coordinative efforts of management are simplified.

Besides, during the late war, many industries discovered that 30 to 50 per cent of their labor costs were incurred in purely nonproductive materials-handling operations, including the receiving, transporting, and storage of materials and movement from one productive operation to another. Mass handling techniques, new arrangements for machinery and equipment, new types of conveyors and handling equipment, all have stimulated the development of highly integrated production facilities.

Thus, in many types of processing operations, the process methods and arrangement of plant facilities automatically coordinate the jobs and the men. This does not mean that there is any less organizational work to be done by the management. It is merely organizing with stress on the facilities, through advance planning of plant layouts and arrangements which, when complete, establish the pattern for the coordinating efforts of the men involved.

There has been sufficient evidence in the experience of the past few years to justify the statement that all types of manufacturing industries should strive for greater integration of production facilities if they are to compete through reduced costs and increased efficiency.

Equally important is an effective program of preventive maintenance, repair, and constant modernization of existing equipment, whether the plant be large or small. Such programs, if inspired and actively followed up by the management, aid tremendously in generating the healthy spirit and pride in their machines which is so essential to the discipline of the workers. Safety measures and normal precautionary devices are further necessary adjuncts.

ORGANIZING THE METHODS

In this area of industrial organization a few activities stand out where methods should be stressed, no matter what the product is or how peculiar are the manufacturing processes:

1. *In manufacturing and in distribution* the methods to be used should be most thoroughly planned in advance of the organizing of layouts and facilities before the actual arrangements are made and operations are started. Too frequently, in small plants especially, one finds a factory manager who wants to forego concentrated thought prior to purchasing a machine and who, when faced with a new product design, quickly decides "That will require a triple action grinder. We'll install it over in the north-west corner, beside the press brake." Then the order and the machine are placed without further consideration. A little additional foresight and a simple methods-planning technique may save many dollars in rearrangement or unnecessary materials-handling costs in the future.

2. *In organizing nonproductive operations* such as receiving, storage, and transportation of materials it is important to plan the methods to be applied in operating. Inefficiency results if this is overlooked, and the costs of handling materials in the plant and of the physical distribution of the products remain higher than they would be if more attention to the details of operating had been given in advance.

3. *In organizing processes* good management will keep abreast of recent developments in processing methods in the same or similar industries. New

methods should be adopted by means of a facilities-modernization program and should be aggressively followed up, even though lack of capital may preclude taking advantage of all developments. Active interest in new processing methods keeps management informed, so that, when a new machine or piece of equipment is purchased, the best will be obtained. It also enables the management to improve the cost position of the company relative to the performance of competition.

If the processing and distribution methods are considered when determining the facilities requirements, it follows that the facilities will be better integrated and will provide for a higher degree of coordination of the efforts of the men. Nevertheless, just as neglect of one of the cardinal principles of organization endangers effective coordination of the whole, so undue emphasis or neglect of the methods provides unbalance and renders ineffective whatever excellent organizing is done in the other elements of the organization.

ORGANIZING TECHNIQUES FOR THE SMALL PLANT

The organizational problems with which the manager of a small plant is faced are of the same character as those encountered in larger enterprises. The only difference is in the magnitude of the problems. The same organization principles apply in the day-to-day operations, and the same techniques are used in solving organization problems. The difference in magnitude of the operations of a small industrial enterprise does create certain peculiarities, however, which the manager should bear in mind in organizing the plant for most effective operation.

Because of the economic limitations and the small number of personnel, there is much less possibility for strict specialization in a small plant. The chief executive, in addition to managing the enterprise, must frequently function as his own sales manager, chief accountant, and perhaps engineer. The works manager not only may serve as production chief but may also purchase materials and machinery.

This may lead toward neglect of one or more necessary functions and undue emphasis on the other areas. If the manager is a shopman, the sales and accounting activities of the company may be weak. And thus it is of utmost importance for the small plant manager to be on the alert to *prevent the development of weaknesses in any one area*. He should aim to make the organization equally effective in all parts.

The manager may be able to dispense with some of the more costly and formal techniques of good organization practice. However, he cannot be

certain of effective performance without some of the organization tools which any plant can afford:

1. *A functional organization chart* of the activities of the company should be prepared. The chart should be constructed objectively and logically, and it should describe the activities to be performed, without regard to personalities, number of personnel, or other prejudicial factors. Construction of such a chart in this manner will enable the manager to analyze his organization from the viewpoint of a theoretical ideal, compare his organization structure with that of other companies in similar industries, and find solutions to the principal operating problems.

2. *A chart of the organization structure of the company* should next be prepared, using the functional chart as a guide. It should show every job, or at least the most important ones, and give the sectional pattern or breakdown, including titles and names of the individuals who are to perform the duties listed on the functional chart. In this step the manager brings the theoretical organization down to earth and faces the practical aspects of managing the business. He determines the current performances of his key men, aligns their work according to individual abilities and peculiarities, and establishes definite responsibilities and authorities for each. He should not fear placing the same name in several blocks on the chart, since if the same individual is to function as sales manager and chief accountant, the chart should reflect both assignments. He may even show himself on the chart in several places, performing the function of works manager or chief engineer in addition to filling the job of general manager.

3. *Finally, detailed write-ups of the assignment, responsibilities, and activities* of each position on the organization chart should be prepared for the guidance of the individuals assigned to each job. These specifications should include a detailed statement of (a) the assignments, (b) the responsibilities and authority the individual holds in his operations and activities in his segment of the organization and the personnel reporting to and working with him, and (c) the relationships with other members of the organization outside his area of immediate responsibility.

A most critical and often neglected phase of small plant activities is the responsibility of the manager for constant supervision and follow-up in order to make certain that all phases of assigned responsibilities are being executed as laid down. Too frequently one finds managers content to assign tasks and draw an organization chart and then relax now that the organizing job is done. Actually it has only begun, as there is nothing static about organization. Internal as well as external organizing are dynamic, never-ceasing activities, requiring active follow-up and progress reporting to maintain their effectiveness.

HOW TO CREATE THE INTERNAL ORGANIZATION

Creating the organization involves the physical construction of the plant; the buying of machines, equipment, and tools; the planning and adoption of processing methods; and the employment of men. In addition, it has to provide for the inflow of materials, the outflow of products, the storing and handling of both, and actual transportation into, through, and from the plant. Organizing also involves obtaining office space, buying office furniture, setting up record systems and hundreds of other physical details which are needed to carry out the desired activities. Besides, services must be obtained such as power connection, telephone installations, water, gas, and other necessities.

All this costs money, and largely the organization of the company is the physical equivalent of the capital which has been used to create the internal organization. Intelligent organizing will aim to provide best utilization of the capital.

In view of these facts it is necessary that all organizing work be carefully executed. It must be based on definite, careful planning of all facilities, methods, and man-power requirements. All must be carefully coordinated in order to provide the necessary instruments and arrangements to fulfill the objectives of the management. A plan, therefore, should be made the nucleus of all organizing.

THE NUCLEUS OF ANY ORGANIZATION



ALL ORGANIZING MUST SUIT ALL PLANNING

If the plan clearly states the projected volume of sales, the products to be made, the technical processes to be used, the machines to be acquired, the kind of building best suited to manufacture, and the finances required, the actual process of organizing can be executed with maximum effectiveness. Without such a plan, management will always be in doubt as to the state of the organizing work.

Even in an established plant, organizational planning is a required activity because organizing never ceases. Organization is not static; it is a dynamic and ever-changing process. The planning must provide for this movement and change in character of the operations.

Each small plant should organize its activities, not according to any standardized pattern, as there is no one organization pattern which will fit

all circumstances, but rather to fit the particular set of conditions which prevail for that particular plant.

By nature, the activities of all industrial organizations require engineering, production, sales, and accounting of the financial aspects. Each of these activities is self-contained but they must be interrelated. Although there are subsidiary areas which may appear as separate and distinct in an organization chart, all activities stem intrinsically from one or another of these four general categories.

CREATING THE INTERNAL ORGANIZATION



THE INTERNAL ORGANIZATION MUST PROVIDE FOR ALL OPERATING ACTIVITIES

In most instances, this pattern of activities establishes the general layout for the organization structure. This is especially true in small plants, where a limited range of work is done and a diverse and specialized executive staff is uneconomical to sustain. Some practical techniques for organizing small plants have already been discussed. These same techniques apply as well down the line into the engineering activities or into sales. However, there are certain characteristics peculiar to each of the main areas of activity which are worthy of serious consideration in creating the internal organization.

Organizing Engineering

Engineering research and development activities, because of the expense involved, are usually held to a minimum in a small plant. Many small industrial enterprises find it more economical to call upon the services of outside research firms for work upon their specific problems. Others, however, begin by organizing research facilities first, on a limited scale, and expand them and their engineering as products become available and sales increase. Those who make products to specifications have to provide not

only for research but also for designing, development, testing, and possibly service and repair.

Since Chap. 14 covers technical research in detail, no effort is made here to expand on this part of organizing. It should, however, be well understood that in any industrial plant continuing improvement of the product depends on the quality of the engineering organization.

While the engineering problems of many small plants can be handled by means of the ingenuity and inventiveness of the manager alone or perhaps by a few individuals, the main point to observe is not only that engineering be given its proper place in the organization but also that the best available facilities and men be provided.

Organizing Production

The facilities, methods, and men that are combined into the production organization cannot be chosen arbitrarily or at random. They must be able to fulfill the tasks of making the products as the plans require. The infinite variety of detail activities which are encompassed by the manufacture of a product and the limitations in man power that have to be overcome require great ingenuity, inventiveness, and practical know-how on the part of those who are responsible for this part of the organization.

The pattern of the production organization in a small plant may appear on the surface to be entirely different from that of a larger plant. However, this is on the surface only. In reality, the organization problems of both kinds of plants can be solved only by buying the best suited *machines*; setting them up to provide coordinated, efficient *flow of work*; making them ready for utilization of the latest *methods*; and getting the best available *men* to do the work. Limitations in number of personnel, however, do restrict the works manager of the small plant in carrying out this part of the job. In most instances he and his foremen must do the planning as well as supervise operations. Furthermore, the works manager may not be in a position to have men purely in supervisory work, since it is necessary in many small shops to organize supervisory operations around "working foremen" or "leaders" chosen from the labor force. In these cases the whole load of planning facilities and methods and choosing men falls upon the works manager.

One principle of organization stands out as particularly important in these circumstances, however. It is essential that the *definition of the functions* of every man in a small manufacturing organization be very clear. Besides, provision for good maintenance and repair must be made, because a small number of machines require as painstaking maintenance measures

as those practiced in a large machine shop; the layouts must be planned even more thoroughly to provide for best flow. Nothing should be left to chance, and every part of the small organization must be assigned and clearly explained to some particular individual although he may have numerous other duties.

Several areas of activity which are most often neglected in a small manufacturing organization are worthy of special mention. The field of *production control*, which ties in so closely with methods engineering and without which effective control of inventories is impossible, is a case in point. Too frequently the shopman is inclined to dismiss control systems as so much "fancy paper work" which is expensive to maintain. Admittedly, job-order controls and work-load scheduling can be made complex and expensive if not designed for the operation in question. However, many small plants, after taking the pains to devote some study to control problems, have adopted very simple scheduling and production-control follow-up procedures which have provided greater productivity, reduced cost of operations, and, even more important, actual control of inventories and the work in process. A good production-control system, based upon effective methods engineering, in reality provides the organization in a small shop. Without some measure of control there can be no coordination.

Such a system, once established, need not require additional employees to maintain. It can frequently be tied in with the sales-order-invoicing system in such a way that the foreman or machine operators themselves operate the system.

In the small-production organization special attention must be given to *materials handling*, which includes all so-called nonproductive handling operations such as receiving, storage, transporting to the work area, transporting from one work area to another, packaging, and shipping. All these operations should be studied carefully and placed where they can be performed most efficiently, with such facilities as will provide the lowest possible unit-handling cost.

During the late war many new types of handling equipment and methods were developed which contributed greatly to the reduction of these overhead costs. Reductions in handling costs in the area of 50 to 75 per cent have become common, merely by preplanning of productive facilities layouts, mass handling techniques, and application of effort to eliminating any obvious wastage of time and motion. Application of new materials-handling engineering techniques does not require highly scientific time and motion studies with stop watches or other paraphernalia in a small plant. Rather it is a process of common-sense reasoning and observation of material flow and storeroom workers in action.

Organizing Sales

The pattern of the sales and distribution organization will depend almost entirely upon the nature of the product, although in most instances the factory sales office and staff will undoubtedly be very small. The nature of the distribution process, whether the product is sold direct to the consumer, direct to retail outlet, or through a wholesaler, also has a great effect upon the internal sales organization.

Small plants producing consumer goods frequently find it necessary to distribute these goods through an intermediate, wholesaling organization, limiting the direct customer contacts which are made by the factory sales office. In reality, the wholesaler, jobber, or broker functions as a field sales organization for the plant. He provides the facilities, methods, and men for warehousing, selling, and promoting which otherwise the small manufacturer could not afford.

No matter how small the sales volume or the magnitude of the activities of the plant, there are certain facts about the sales organization which require attention from the factory sales office and the plant management. A *continuous study of the sales organization and its performance* is one of these. Too many small companies do not study their sales organization beyond the wholesale level, nor do they know if they have the right outlets in the right places. No matter what the distribution scheme may be, the aim of the sales office is to get the product into the hands of the greatest number of buyers. A realistic sales picture can be obtained only through a most careful study of all the elements that make up the sales organization. Improvement in the organization usually means improvement in sales. When sales are low or falling off, it is time to study and improve the organization.

Organizing Accounting

The manager of a small plant, coping with fast-moving operating problems, often finds himself handicapped by the *inadequacy of his accounting organization*. Many small business enterprises keep no books at all, and most small plants rely upon a simple set of records which are installed by a public accountant and kept up-to-date by a girl who has to answer the telephone, go to the bank, and make out the pay checks.

The accounting organization need not be elaborate, but the main point is that the accounts should be set up so that they are a complete replica of the plant organization as a whole, of each important section, and of each important activity. Thus the accounting scheme should follow the organization chart in reporting and recording costs. The checkbook, bank deposit book, the journal, and the ledger are effective only if they give the informa-

tion about the plant as the manager needs it to see how the various parts of the organization function, what they yield, and what they cost. Provision for the standard profit-and-loss statement and balance sheet is not sufficient for financial control of operations. They fulfill the necessary legal requirements of financial accounting, but the accounts must also be so organized as to provide operating-control statements.

Job tickets, bills, invoices, order forms, and payrolls are not so impressive as machines or tools, but they are the all-important instruments of coordinating the many financial aspects of managing the business. Thus they are the necessary tools for measuring the performance of the plant in fulfilling its purpose.

There is no substitute for accurate and timely reporting of facts concerning cost of operations. However, many *simplified techniques* have been developed through years of operating experience which aid the small plant manager in his task of evaluating performance. Illustrative of these is an effective yet simple control of cash.

The end and aim of all of the activities of the plant are to keep the amount of cash coming in at a higher level than that going out. Exact knowledge of the cash position of the business at any time is the key to an effective control of the company's finances. To provide this control, the accounts must be so organized as to reflect the relative position with respect to the "break-even point"—that level of production which produces a sufficient amount of cash income to meet cash expenditures at that level.

More will be said about how to do and use accounting in Chap. 16. It should be sufficient, therefore, to state here that, if accounting is to serve as a working tool for the management, it must be organized so that it furnishes the information which is needed quickly, reliably, and in such form that will enable appraisal of internal operations.

HOW TO CREATE THE EXTERNAL ORGANIZATION

Any plant is part of its environment. It must deal with other organizations and thus should bring its affairs into a definite pattern relative to these others. Small as the plant may be, for many people it is an organization of importance for its potential role in the future.

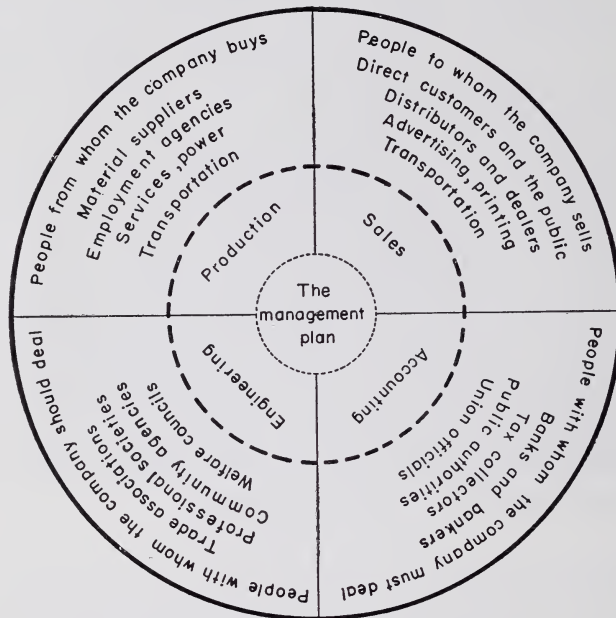
In its beginnings, the small plant is often to a certain extent dependent upon the conditions of its neighborhood and the economic life of the community. Thus it must fit itself into the local scheme of things to its best advantage.

Many plants, however, have reached great size, not only by their products and good internal management, but by the systematic development of their external organization.

How to obtain good will, good cooperation, and good public relations has become almost a science in itself. Costly surveys, opinion sampling, magic posters, carefully worded letters, illustrated and understandable financial reports, open-house days, and many other techniques have been recommended for achieving good public relations and also better management-employee relations.

The small plant can seldom afford most of these methods, and possibly it does not need them. Good will and wholesome relations within any plant's environment are more a matter of organization—the systematic application of effort to integrate one's own organization with the organizations of others.

CREATING THE EXTERNAL ORGANIZATION



THE EXTERNAL ORGANIZATION TIES THE PLANT INTO ITS ENVIRONMENT

In the immediate environment of the small plant, suppliers, service companies, railroads, trucking concerns, dealers, distributors, banks, insurance companies, trade associations, and quite a few other organizations offer the use of their organizations, their men, facilities, and methods to any plant or enterprise that may need them, and they are usually as interested in providing for good relations as the manager of the small plant is in obtaining such a relationship.

The beginning of all relations is meeting and knowing people, and good relations come from carefully planned coordination of common activities and common objectives—in other words, from organization.

Relations with Suppliers and Service Industries

The company's suppliers are possibly the first with whom relations have to be organized. They may be small plants also, located in either the same or nearby environments. Their problems are bound to be similar to those of the plant which seeks their services. With these firms, the small plant manager can readily establish and maintain fair and sympathetic relations, although watching carefully the suppliers' prices and performance relative to competition. Such an approach fosters the healthy spirit of cooperation which leads to satisfactory performance, good service to the customer and still provides reduction of costs and selling prices.

Public utilities and other service industries which supply the plant can also be very helpful to the manager with a low budget for facilities. Their engineers can frequently give advice on improving the internal organization by a better utilization of the services they supply. Thus they should be worth knowing in much the same manner as suppliers of materials.

Transportation companies and their agents, too, can be helpful and should not be overlooked in organizing external relations.

Relations with Customers and the General Public

The small plant manager and his product must be their own public-relations department. The worth of the product will in most instances speak for itself in operation. And yet the management should take pains to see not only that the present customers are dealt with properly but that new ones are obtained from those who are still "the general public."

In these efforts, however, the small plant should not aim to cater to the public in general, but it should limit itself to those specific groups from which its potential customers might come. "General" advertising has never been very productive in sales or truly effective in expanding an organization and its distribution. *Selective advertising* and well-composed literature are much more effective, even if undertaken on a modest scale.

In selecting the transportation organization for distribution, the small plant should be even more careful than in selecting those who do the transporting into the plant. Unreliable delivery and careless manners of those who deliver are bound to lose customers and sales.

Relations with Distributors and Dealers

Wholesalers, retailers, distributors, dealers, jobbers, agents, chain-store buyers, and even exporters are not very different from other business people. They, too, seek good relations, and they do not always insist on maximum quantities or on impossible terms. In gradually developing a wider sales organization they can be approached and their organizations can be enlisted for mutual benefit and greater sales volume. Middlemen, contrary to common belief, are not always the most costly outlets to use. They do render services and increase sales in their own interest.

Relations with middlemen will be best and will last only if mutual consideration is given and insisted upon and good business principles are observed by all concerned.

The main point, however, in organizing the distribution scheme lies in *choosing the right types of outlets and in such localities* so that not only present production can be disposed of but future increases in sales and thus in the organization can be expected.

Creating a good external sales organization needs not only planning for the near future but foresight and care in balancing it with the production that can be achieved in the more distant future. Haphazard expansion should definitely be avoided.

Relations with Financial and Other Institutions

In all his organizing the small plant manager cannot avoid contact with quite a few institutions which are part of the environment, exercise great influence, and can provide great assistance to him. Lack of a sympathetic attitude not only may be costly but may have serious consequences with respect to future growth.

Good relations with banks and their managers are not too difficult to establish. They are in business too, and competition among them is keen. They gladly render service as long as there are funds, and if asked, they oblige by giving advice on credit and other financial matters. Actual credit and loans, however, are much more difficult to obtain; they literally depend not only on the conditions of the organization which asks for such accommodations but equally as much on the relations that have been established and how they have been maintained.

Selecting the right bank, being known there personally, and even an occasional chat about the business, the plant, the plans, and the organization can do no harm but may do much good when real cooperation is needed. By creating an atmosphere of cooperation and mutual interest, over a period of long association, the plant manager will find it much easier to obtain financing for expansion or improvement of his activities.

At other times, financial institutions can be of great benefit to the small plant manager in advising him about internal fiscal matters and possibly on relations with governmental agencies. Frequently the small plant manager gets better advice and counsel from his banker than the management of a large enterprise obtains from its highly paid staff.

Relations with tax officials, local, state, and Federal, can be mutually beneficial. They, too, will give advice if asked in the right way, just as they can become rather difficult to deal with if relations have been neglected.

With all due regard for the cooperation obtainable in tax offices, however, it will be best to go there well prepared, and as introduction to this subject Chap. 17 should provide useful reading.

Relations with Public Authorities

In organizing as well as in operating any plant, quite a few occasions arise when *city authorities* have to be seen, consulted, or petitioned to grant certain rights, permits, and privileges or to make certain concessions. A straightforward, honest approach is definitely the best in all relations with public authorities, and compliance with regulations is bound to aid in keeping such relationships mutually beneficial.

By participation of the manager and his executives in civic affairs, public relations can be strengthened for the plant and its employees and for the community as well. Such actions not only show willingness to participate in what is considered best but are also an expression of the desire to belong and to remain on good terms with the environment.

Relations with Union Officials

Even if the working force is not organized in the plant, unions and their official representatives have to be dealt with. Labor unions, as such, have become a part of the economic life of the nation and thus cannot be opposed unjustifiably, as some unreconstructed rebels in the ranks of small industry would like to do. The law provides for free elections among employees, and the best approach the management can take is to accept the stated desires of the majority of its workers with regard to union elections.

This does not mean, however, that the management should accede to the wishes of the first union organizer who happens on the scene. Union leadership, when it represents the true interests of the worker, also appreciates the necessity for cooperation.

Therefore, a firm yet sympathetic attitude toward labor unions and their officials will in the end provide and maintain the type of relationship which is essential to successful and efficient operation of a small plant.

Paramount in this attitude should be the willingness and the desire of the management to make clear to the laboring force the position of the company with respect to future plans and reasons for current activities.

The desire to create a stable, lasting organization and thus provide real job security for the workers should go a long way in making management's position clear and relations more harmonious.

Relations with Trade and Other Associations

Within the environment in which the manager must aim to anchor his organization, there is another group with whom relations need not be established for necessity but should be established for mutually beneficial reasons.

These organizations are the result of cooperative efforts for the development of group spirit within any trade or industry, among the practitioners of the same profession, among the members of the community, and possibly for the development of that spirit which helps others in need.

Trade or industry associations do research useful for the members, and through their publications and bulletins information can be obtained which the manager should have and use in all his activities. *As a member he is entitled to privileges* which he could not obtain otherwise: statistics, legal advice, and specific technical information and counsel.

The annual meetings of most trade or industry associations provide the latest information on important subjects of current interest, and also it has become customary to prepare an outlook for the future of the industry, representing a consensus of the best opinion in the field. These can be valuable guides to the individual company and especially to the small plant.

A particularly valuable service rendered by most trade associations is keeping their membership aware of the important issues and economic changes that should not be favored if an organization is to be kept strong, healthy, and progressive.

Professional societies, such as the American Society of Mechanical Engineers and others, follow similar lines and render similar services, only their field is more or less limited to their specific professional and research knowledge.

Technological progress has become so rapid and multilateral that, without the professional societies, their meetings, publications, special research studies, and reports, the manager is bound to find himself outmoded in his knowledge and outdated in his engineering and production processes within a few years.

Communities are not static; they are dynamic and change for better or worse as their people change. To participate in at least one of the organized *community activities* not only should be a matter of good business

judgment but should be sought by anyone whose plant is dependent on its environment. By now, participation in community efforts can be sought in so many fields that even the busiest organizer can find one to suit his particular talents or interests.

SUMMATION ON ORGANIZING

The job of organizing an industrial plant is basically the same, whether the plant is large or small, the only differential being magnitude of operations. The principles followed and techniques used are identical, although certain areas require greater stress in a small plant and the organizing techniques used may be less formal.

Organizing is concerned with the over-all plan and with operations, but it is a separate and distinct phase and always must be considered as such. It creates the coordinated body of the organization as specified in the plan and makes ready for action.

The most important points to be kept in mind by the small plant organizer are:

1. The organization must be completely integrated with the plan of operations if it is to succeed.

2. The elements of the organization are the men, the facilities, and the methods. All must be provided and coordinated effectively to enable unified action.

3. Three basic techniques of organizing should not be overlooked or neglected: analysis and preparation of functional organization charts, layout and maintenance of a chart of the organization structure, and preparation of detailed write-ups of responsibilities, authorities, and areas of activity for each level of the organization structure.

4. The activities performed by the internal organization cannot be organized according to a standard, predetermined pattern. They must be considered in relation to the special conditions surrounding the particular industry and inherent in the individual company.

5. The external organization should be established with as much care as is devoted to the internal affairs of the company.

6. The ideal organization is one in which all elements are in balance with each other and with their environment and the maximum coordination of all activities is obtained.

There are no standard patterns for the organization structure or panaceas for the solution of organization problems, since organization is an association of human beings to accomplish a common purpose. Logic, common sense, and a large measure of human understanding are required in a good organizer—there is no short cut to good organization practice.

CHAPTER 7

OPERATING THE SMALL PLANT

BY

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THE IMPORTANCE OF OPERATING

For almost five decades operating has been understood to mean only the performance of production and shop operation. Quite generally, the recommendations for better operating were limited to this field, because it was the only one originally covered by scientific management, and because shop activities were most urgently in need of improvement.

Today, any plant, and especially the small plant, must be operated well not only in the shop but in ALL its activities. Good management achieved in production should not be lost and offset by deficiencies and poor management in the over-all operation, of engineering, selling, or financial activities of the company.

True, in perhaps 100,000 small plants which have all or most of their selling done by others or which produce under contract as suppliers to larger companies, production is still most important, and engineering and selling are not main parts of operating. Nor do these plants have to create best operating conditions in their environmental relations and activities, because all this is to be accomplished by those for whom they are under contract. In such plants, production still is the main field in which best operating conditions have to be created.

But there are at least an additional 180,000 small plants in the United States today which must do full-fledged and complete operating where even best shop operation alone would not suffice. Most of them have to face serious competition, and especially in times of drastic economic changes, ALL their activities must be operated well to keep the plant economically strong, competitive, and progressive.

¹ The author was secretary, treasurer, and chairman of the Executive Committee, Metropolitan Section, ASME.

Internal plant conditions, meaning the way in which a plant is operated within, have a great bearing upon its reputation and future progress. The small plant, in particular, is much more open to scrutiny than most managers realize. Everyone likes to see a job well and efficiently done, and most customers conclude from what they observe within the plant and the kind of service or product they get what a small company might be able to do in present and future dealings, and they act accordingly. The fulfillment or nonfulfillment of promises does reveal the kind of operating that prevails, and from this many customers draw their own conclusions without asking for explanations. To illustrate:

The author's company has grown from very small beginnings to a company of 200 employees. Starting as a general machine shop, doing specialized development work on tools and machinery, depending on the personal initiative of a few men, it has grown to larger proportions, requiring the combined efforts of many. Besides the building of special machinery and tools, it now produces a variety of small zinc die-cast parts by a special process. While still a small plant, it has a variety of plant activities, comprising not only such production lines as zinc die-casting, plastic molding, plating and finishing, machining and assembling, and allied general plant functions but also the development, design, and manufacture of its own production machinery and tools, all to be combined into a rather complete and independent unit. Such variety of activities naturally produces its share of problems to achieve efficient operation and coordination of the various functions and activities.

This growth and progress of the company over a period of about 20 years were achieved mainly by a determination to do better than expected, by the quality of its products, and the fulfillment of all promises made. While, no doubt, mistakes were also made and other shortcomings existed, there was nevertheless constant and careful attention to good plant operating in ALL its activities which kept the costs and prices at levels at which sales could be obtained in good times as well as in difficult periods.

MEANING AND PURPOSES OF OPERATING

To get useful work done in the most systematic way is the practical know-how meaning of all operating that is undertaken by any enterprise.

A child may work hard in making mud pies, but his work lacks usefulness and systematic procedure. All housewives claim that they work very hard; their work is useful, but mostly they lack system in their efforts. The athlete works with all his physical resources and with most refined systematic procedure—yet his work is only called sport because, generally, it serves no useful purpose.

To satisfy physical needs through the continued furnishing of goods or rendering of services, involving the most effective application of work, can well be considered to be the basic purpose of operating.

The physical needs, created and continuously expanded by the progress in civilization, require steadily increasing quantities, varieties, and forms of products. Some of these needs originate directly from human and other living beings. These needs are satisfied by furnishing goods or services to them—housing, clothing, food, transportation, etc. Other needs are indirect needs, caused by the long chain of work processes which have to be planned, organized, and performed before most materials or forces of nature can be offered in form of products or services. Agriculture, mining, forestry, industry, transportation, banking, trade, amusement, education, medical endeavors, and even political actions cause needs today far beyond comprehension in all their varieties and quantities.

The continuity of needs and the steadily increasing diversity of goods and services required have become the bases for the operation of establishments to satisfy them continuously. Small enterprises mostly cater to new and not yet fully developed needs; large enterprises generally fill those needs which have grown or can be expected to grow into sizable quantity operations.

How enterprises and especially small plants have to be planned and organized has been set forth in previous chapters. The following discussion will therefore be restricted to operating, which represents the third phase in managing any enterprise, and to operating small plants in particular.

BASIC PATTERNS OF SMALL PLANT OPERATING

Small plant operating has been developed up to now in three basic patterns. The most primitive shops apply a kind of operating which at best can only be called *muddling through*.

In better managed plants a better mode of operating prevails, which also may have more or less admixtures of *scientific methods* of management, such as scheduling boards, incentive wages, fairly good record systems, possibly cost controls, and a variety of other features.

The best managed small plants apply *know-how operating*, a procedure for getting work done in a truly efficient way which is very similar to the kind of operating found in the best managed large plants of our times, although it is applied on a smaller scale and in simplified form.

If one analyzes these various kinds of operating more carefully, he finds that those plants without any pretense to scientific management and also those which aim to operate with more or less scientific methods mainly

stress and depend on the efforts of individuals, be they manager, superintendent, foreman, or worker, to see the work through.

The plants applying know-how operating mainly aim to create a best performance of work by using a kind of management that *brings machines, methods, and men into the best combination*, which owing to its basic concept and development allows for better operating than the operating systems based mainly on men.

OLD CONCEPTS AND FORMS OF OPERATING

In order to get any kind of work done, the managers either have made themselves or have relied on "bosses," overseers, or foremen, who would tell the doers or workers what to do, how to do, and when to do. Authority for the boss and obedience by the worker were and still are the two premises of this kind of operating.

As time went on, both the *authority* of the boss as well as the *obedience* of the doers were backed up and ensured by techniques of management which introduced rules and records, policies and instructions, orders and manuals, principles and practices covering every kind of relation: rights, wages, hiring, training, safety, insurance, unions, laws, grievances, strikes and their prevention—all this in addition to dozens of strictly technical operating details to be planned, organized, seen through, and supervised by the manager or foreman and to be observed by the doers.

Obviously, operating has become a rather complex *technical* as well as a complex *management* task. If it is mostly based upon the authority, ambitions, or assertiveness of individuals, it is bound to be influenced also by their weak personal traits, such as frailties, personal interests, lack of willingness, and limitations in their abilities to achieve best performance or operating.

There are thousands of small plants which operate fairly efficiently on these "personal" premises. But there are ten times as many where operating is mere makeshift and where waste, inefficiency, shortcomings, lack of coordination, rule-of-thumb arrangements, friction, jealousies, and smothering hostility create low productivity, delays in delivery, poor quality, and costs higher than they should be.

The interests of the owner, manager, foreman, or boss are too often and too obviously in open contrast, conflict, and clash with those of the doers, called workers, a situation which is definitely undesirable, especially in the small plant.

The stress upon men, the irresponsibility of men, the weaknesses of men, the difficulties of creating best relations among men by superior men are

the characteristic features of all the older forms of operating, regardless of the amount and extent to which scientific management techniques may be applied.

Especially where the interests of the workers are strengthened by affiliation with one or a few unions and where their union interests and policies are brought into play, small plant operating can become difficult indeed. And when, besides, strong competitors lower prices and costs remain high, small plant operating of the old kind is bound to lose out, regardless of the merits, qualifications, and intentions of the individual, be he manager, superintendent, or foreman.

BASIC OBJECTIVES OF KNOW-HOW OPERATING

The more recent procedures of know-how operating do not stress "the superior and his authorities," nor do they overstress any longer "the individual and his interests." They concentrate their main interest upon the work to be done and systematically aim to

1. *Plan the work execution in detail*
2. *Use the best machine and the best tools for execution*
3. *Develop and apply the best method*
4. *Put on the best suited man*
5. *Get real production and work from the machine*
6. *Pay for each job what it is worth relative to all others.*

This kind of impersonal approach to operating gives to this phase of management a neutral, more technical character, quite different from the personalized kind of operating. The foreman, superintendent, or manager is no longer preoccupied with upholding or defending authorities and meeting interests. He becomes a factual operator whose main interest is aimed at UTILIZING ALL AVAILABLE FACILITIES IN THE BEST, TECHNICALLY MOST EFFECTIVE MANNER. This is his main operating interest and operating know-how.

Operating that aims at creating the technically best work situation in each workplace and at coordinating all such workplaces into the best flow of work is bound to create *true productivity, not by influence or pressure upon men, but by elimination and pressure upon all forms of waste*: waste in work times, waste in idle times, waste in materials, waste in tools, waste in transportation, waste in space, waste in handling, waste in clerical or administrative paper work, waste in relations, waste in meetings, waste in storing, waste in recording, waste in selling, waste in accounting, waste in

design and engineering, waste in research, waste in buying or in any other activity.

If all operating is directed at the elimination of ALL wastes, the *total of all savings* is bound to be greater than the savings obtained only in work operations, which may be created by incentives, time study, time standards, and similar means.

Practical know-how operating recognizes that it has to deal at all times not only with men but also with machines and methods. It does apply to all these operating elements the latest knowledge that can be applied under the given conditions of the plant. Know-how operating is based primarily upon *technical thinking* rather than on persons, economic stimuli, scientific theory, or legalistic haggling about the "rights" of the employer, the workers, or the union.

Accordingly, the entire procedure of know-how operating is conceived as follows:

1. Provide and use the best MACHINES and other facilities which can be afforded and obtained or developed to get the best daily performance in the work or work range to be done, not only in production but in operating all other activities.
2. Study, improve, and use mainly those METHODS which help in getting the best daily use from the machines and facilities, not only in production but in all activities that have to be performed. Do not concentrate primarily on the method used by the men, but on the method applied to the machine, tools, equipment, transportation, paper work, etc.
3. Obtain, train, and put on each job MEN who would know or learn how to use the provided machines or equipment and aim to obtain by the chosen methods such a truly effective performance as is possible by the facilities and methods provided.
4. COORDINATE machines, facilities, methods, and men in such a manner that all work is done and flows through the entire work process with a minimum of waste in any form.

No machine, mechanism, or device yet built is 100 per cent effective. But the patient and repeated application of engineering know-how has created machines and mechanisms which are reliable and fairly efficient, fulfill the tasks expected of them with a high degree of certainty, and do not balk or break down from continuous operation.

Know-how operating sets itself similar management objectives, and just as the design engineers have made almost unbelievable improvements, so the operating manager must aim to obtain better and finally the best kind of operating which can be evolved. Big plants are big only because they

have improved all their planning, organizing, and operating. In small plants there are still to be considered and gradually to be applied untold possibilities for improvement. The daily grind and struggle with details, which is part of operating, should not suppress the immediate or the long-range objectives which any good plant operator should adopt and pursue.

IMMEDIATE AND LONG-RANGE OBJECTIVES OF GOOD OPERATING

Most plant managers consider their *immediate operating* as satisfactory when they accomplish their daily production on time, in the desired quantities, in the specified qualities, and more or less within the costs that were allowed.

As hectic as conditions are in most small plants, that is accepted as good operating, especially if one considers that material shortages, absenteeism, labor troubles, union influences, machine breakdowns, forgetfulness, and sudden changes in desired designs, quantities, or delivery dates occur continuously and require much more detail actions, detail rearrangements, detail operating than appear on the work orders or on the change notices. Satisfied customers are highly important contemporaries, and as long as nine out of ten are pleased, the immediate operating has been good indeed.

In addition to these achievements, however, good operating management must aim to add a few *long-range objectives* that are not quite so obvious but are of great importance for either improving or diminishing the future development of the plant. These objectives can be listed as

1. Creation of good reputation
2. Creation of steady employment
3. Creation of lowest costs.

At first glance these long-range objectives of good operating seem not to be connected and possibly to exclude each other. Actually, they are intertwined and interdependent.

Creation of Good Reputation: Good operating creates a good reputation, better operating should create a better reputation, and best operating should logically furnish the best reputation.

Reputation is the opinion which people hold of others. It is a most valuable asset to have. It is not created by merely paying one's bills on time and in full. This covers only financial reputation. A plant, and especially a small plant, depends also on the opinion which is created with suppliers, transportation companies, customers and dealers who buy the

products, the plant's own workers, their wives, unions, municipal authorities, credit-information services, and quite a few others. The way a plant is operated affects them all.

Operating in all its forms employs the greatest number of workers, helpers, clerks, foremen, and managers, who also come in contact with the greatest number of the same kind of people employed by other organizations. They all are part of some plant, they reflect the kind of operating that prevails in the plant, and no small plant management can afford to overlook the kind of reputation that they create through the attitudes which they show and express, through the actions which they take. The small plant depends on reputation, especially for the long pull.

Creation of Steady Employment: The kind of operating that is applied also affects employment itself more than any other phase of management. Employee morale, on the other hand, affects operating, and although dozens of books have been written on personnel management and relations, the fact remains that employee attitudes and employment depend, not on theories, but on the kind of operating that actually prevails and on the kind of morale that it creates.

If muddling-through operating prevails, employment can hardly be highly satisfactory or certain, and the workers try through their union to get as much out of the management as they can while they are there. As many plant managers know, muddling through not only is the most expensive kind of operating, it is also the most troublesome in form of labor and union relations.

Scientific operating creates better but not truly satisfactory employment conditions, as is being proved by the extensive legislation, unionization, and unending disputes, grievances, mediations, and arbitrations on wages, on working conditions, on benefits and other issues.

It does seem that even well-done job rating and scientific time-standard-setting or wage-setting procedures do not necessarily improve productivity or operating in its totality, let alone employee morale and employment. It is well known that industry operates at about 65 per cent of its best productivity (1949), and firing still is one of the prime means to improve operating and save in costs.

Stability of employment can hardly be achieved in all plants, but most plants can aim to create it. It should stand to reason that, if machines, facilities, and methods are chosen and coordinated to best advantage, costs are bound to be lowest and sales as well as the men are more secure. At last management can begin to create a real technical basis for better stability of employment and thereby for better morale and better operating.

Creation of Lowest Costs: In the pressure of daily details, and especially after quite a few years during which higher costs and price increases could be passed on to someone, the importance of lowest costs is readily forgotten. Thus it should be only prudent to keep in mind that lowest costs can be created only by best operating and that in the long trend orders are given to those who quote lower prices than others. Prices of manufactured products have been raised a number of times, but they also have been lowered again, mainly by better methods of operating. If they are now (1950) at 1.6 or 2.0 times their 1939 equivalents, this should be merely a long-trend warning that in years to come many plants and competitors will again aim at lower costs and prices. Those managers who realize the meaning of this trend will study and improve their operating in time. Those who fail to get ready in time will fail in their enterprises later and in larger number than ever before.

High wages upheld by increased union strength, high taxes upheld by increased government spending, and high competition stimulated by increased plant capacity give to the problems of plant operating long-trend aspects that hardly can be overlooked today, tomorrow, or at any time in the future.

DAILY WORK PROGRAMS THE BASIS OF BEST OPERATING

Although all operating must be oriented to consider also future developments, those who operate know that the actual performance of work cannot be prepared in all its fine details for any definite length of time ahead. There are too many minute details, and also many details change so suddenly that it is impossible and hardly worth while to prepare daily operating programs for one year ahead, for instance, in every detail. Obviously, this applies to all work programs for engineering, production, selling, financial work, and likewise any other activities, such as purchasing, transporting, etc. Nevertheless one should try to make daily programs as far ahead as possibly can be done in all activities.

Operating without a definite work program can be found often enough. Orders are seen through as they are received; work is passed on as, if, and when it can be fitted in; changes in operating are made with sacrifices in time, order, and costs; but the whole procedure of operating lacks the preparedness which is the prerequisite for the avoidance of wastes.

It should, however, be possible even in the small plant to prepare fairly detailed work programs for 2, 8, or possibly 14 days ahead, dependent on the kind of work to be done and how the activities are managed. This makes it possible for all concerned to get ready, to utilize best the available ma-

chines, to think of the best methods, to select the best man for each work detail to be done, and thus to avoid quite a few kinds of wastes from the very start.

WHAT KIND OF WORK CAN BE PROGRAMMED?

As desirable as it would be to establish detail work programs for all activities and for every man of the enterprise, in the small plant a compromise usually must be applied between the *desire for best order and the necessity of looseness*, which is needed to take care of odd and unexpected situations that always arise.

Generally, only such "regular" activities are worth programming which

1. *Are repetitive daily* or have to be performed for part of each day with a fairly assured regularity or periodic continuity
2. *Involve volumes*, quantities, or qualities of work of sufficient magnitude or value to justify the making of the program
3. *Cover similar work* or activities that can be performed by the same machines, same (or similar) methods, and the same men as often as they arise.

Work or activities which owing to their irregularity, small quantities involved, or specialization are "not regular" always have been best handled in the small plant by the foreman or clerical-section heads through special arrangements among themselves.

The main point to consider is that not all work should be simply and continuously passed on to those immediately supervising the doers but that the management as well as the foremen should gradually aim to consider that there is *regular work* which can be improved by most careful arrangements and *irregular work* which has to be done as best as can be arranged.

It is up to top-management and its kind of planning to decide how much of irregular work it wants to continue or whether it would rather plan to develop only regular work in which much greater effectiveness can be created. Even if irregular work is to be continued, *daily work programs* should be developed covering the daily regular work in detail and providing for *irregular work at the end of each day or on certain days only*, whereby the constant interference of one with the other can at least be reduced, if not avoided.

The operating program should at all times aim to fulfill the arrangements made in form of sales and technical specifications, and if truly good operating is aimed at, a close and continued coordination of the daily sales efforts

and of the routine engineering activities is needed. In this manner additional wastes can be prevented and a better, more stable, and more definite operating can be arranged for engineering, production, and selling. Purchasing and the financial work, too, become more orderly and thus more reliable as a result.

In those plants where attempts, at least, at long-range planning are made, not only the short-range operating programs can be improved, but advantages in costs of materials, in deliveries, in transportation can be sought which help considerably in remaining competitive.

The daily, weekly, or biweekly work programs should blend closely into the monthly, quarterly, or annual top-management planning that may have been prepared.

BEST SUITED TECHNIQUES FOR DETAIL WORK PLANNING

In large plants there are sales-planning departments where the daily sales activities are carefully mapped out and daily assignments are given to those actually doing sales work.

In large plants there are also production-planning departments where the sales orders received are analyzed, the necessary work details are determined, and work orders are written and issued daily to the shops as the machines and facilities are available to do the work.

In both activities schedule boards, files, or other devices are used to reveal at all times the condition of work to be performed on each day and for as many days ahead as work is being scheduled.

In the small plant the same techniques of program making should be applied, but if need be in simplest forms, and always a minimum of paper work, tickets, and report writing should be aimed at. Visualization is always good, and it will pay to train a junior engineer or a reliable old timer who knows all activities to take charge of order writing and of the schedule boards. A simple, easily handled system of tickets and schedule board which can be used for sales work as well as for production work is shown on the opposite page. More elaborate ones are described in *Factory Management and Maintenance*, in textbooks, and in bulletins available from the makers of such devices.

The installation of such planning systems usually helps only in getting better order in the distribution or arrangement of work. It does not create best work performance or reliability in carrying out the work plans or in eliminating wastes. It is for the manager to study the work flow and thus to obtain best performance in each productive work operation and a minimum of waste in all nonproductive activities.

Periodic meetings of the managers with ALL foremen and section heads in charge of the various activities of the plant are probably the most useful and most direct complements to any program-making procedures and the most effective beginnings for bringing shortcomings into the open, for obtaining best cooperation, and also for the development of such improvements as would be desirable to create a best work flow. It is an interesting point to ponder whether or not workers and especially the union steward and even clerical employees should also be invited to attend. Some managers are bound to object seriously to such a procedure, while others consider this as good practice for getting real cooperation among the entire plant group.

DETAIL OPERATION AND PROCESS PHASE STUDIES: THE PRIME REQUISITE FOR BEST OPERATING

All small plant operators know at least "in a general way" how their products are made. Eight out of ten "delegate" the *details* of actually making them and of attending to details to foremen or workers who are willing to take care of this most cumbersome part of operation. Probably only two out of ten small plant managers take a direct and continuous interest in the fine details of the work that is done in the plant.

Process phases are distinct groups of operations that are closely related and necessary to form or transform material into products. *How the operations are grouped* into operating phases is of great importance, since this can be done either logically and effectively or in a haphazard and wasteful manner.

If a manager does not take any personal interest in the manner in which the details of operations are carried out and combined into distinct process or work phases, the detail work is bound to become at first uncertain or sluggish and later it will be made more complicated than it need be by the introduction of unnecessary or weak operations, until a rather ineffective kind of operating results, "foam beating." The men look busy, but they do a good deal of "hollow work." If the foreman tolerates this, productivity may readily drop to 50 per cent of true work performance, and once this has become established work practice, there is little a manager can do to improve operating conditions. Excuses and explanations become as numerous as the "foam beating," and if this is met with firmness, "grievances" arise rapidly and in ever-growing intensity.

If good pay is provided for every operation, every worker will try to get as many operations as he possibly can perform in a hurry. Sometimes even foremen try to attract as much work into their authority as possible for the

purpose of fortifying their position and prestige. Others ask for raises, stressing the importance of the phase of the processing which they supervise.

This difference in attending to operating details is bound to weaken not only the operating efficiency but also the organization structure, so that jealousies, jockeying for position, and worse features further weaken and unbalance the operating.

Whether a plant performs only one kind of work or makes a variety of products, the process phases as well as *the detail operations must be carefully kept under observation* if good and possibly best operating is to be obtained. Technical as well as management troubles, difficulties, arguments, and poor relations between management and foremen or workers nearly always arise over details; only infrequently are they caused by basic issues. And this holds true not only for operating production, but also for all other activities of the plant.

Operation Breakdown and Machine Assignment: In most small plants no detail record is made of how the daily work should be performed, nor is a detail record made of the order in which each individual operation should be performed. The daily work orders simply are given to the foreman, who in turn arranges with the workers as to the details.

This procedure not only leaves the degree of perfection to be achieved in operating entirely in the hands of those who are so trusted, it also expects them to be familiar with all details. Improvements are to be created by them, and often this system of detail operating works out well enough. The foremen, if there are a few, simply cooperate and see the work through as best the available machines and men can do it.

In somewhat larger small plants it begins to be advisable to arrange "in the office" for written operation lists, either for every job or, if this is not possible, at least for the more important ones. From time to time, the details of all work should be carefully reviewed with the foremen, not in the office but where the work is being done. With the written operation breakdown should go a tentative assignment of every operation to the best suited machine, but at all times the foremen should be the ones to approve all the arrangements. In this manner intelligent cooperation can be brought about and best operating can gradually be created by the management.

Process Phase Studies and Flow Arrangements: The periodic review of all technical aspects of operating should be a matter of course, but actually this important check is often overlooked.

Operations can be combined into work phases and assigned in such a manner that not only the best knowledge is developed for every phase of the work but also a better work flow is achieved.

Process phase formation must by necessity remain flexible as incoming work orders require, and therefore periodic reviews are highly desirable in order to maintain and adjust the details of the organization and the operating to each other as well as to the changes that occur.

HOW TO FULFILL MANAGEMENT PLANS THROUGH GOOD OPERATING

The actual daily execution of the various activities to be performed in even the smallest plant creates *distinct detail tasks* which have to be considered, prepared for, and executed specifically in every activity. Engineering, production, sales, and accounting or finance do entirely different work, but work it is, and all daily work has to be dealt with in a definite manner if management's objectives are to be achieved.

If the top manager has to think of those issues which affect the entire enterprise, the plant as a whole, all people of the plant, and if he then has to take the proper actions to make the top decisions become reality, the four main operation managers, regardless of whether they are given such titles or not, must think of the detail issues which arise in their specific activities. It is their responsibility to prepare for and carry out the thousand and one detail work tasks that have to be performed if the top decisions are to be achieved.

Operating implies the *fulfillment of all those detail tasks which are necessary to fulfill all the goals that management has set and expressed in its management plan*. No operator should set his own plans independently of the others. All operating should be coordinated with the main goals and plans. But in the actual detail execution each main operator should have the right to take such action, apply such facilities, choose such methods, put on such men as he considers best and necessary to fulfill the common goals. In fact, they are trusted with their specific tasks and responsibilities because no man can singly direct all details of operating.

In order to operate well, however, each manager has to

1. *Plan the daily work* as best it can be done
2. *Obtain or build and organize in detail* the necessary and best suited facilities, machines, tools, equipment, and other physical provisions required to do the daily work
3. *Install and improve the methods* of work to be applied by the workers or employees
4. *Obtain the best suited workers* or employees to do or learn the daily details of the work

5. *Set the daily detail tasks* and get into motion the daily detail performance of all machines, methods, and men
6. *Supervise* all daily detail performance so that the daily tasks are fulfilled until the work is finished.

All this combined is within the scope of operating, but in addition quite a few important tasks have to be taken care of such as advice to management, overcoming troubles of a technical or management or even personal nature, trying to get funds for improvements, keeping up with progress, knowing what competitors do, watching costs and expenses, preparing budgets and estimates, meeting business visitors and friends, and being cheerful, inspiring, considerate, courteous, helpful to all and sundry, within and outside the plant, at all times, on duty and off duty.

Operating is no bed of roses; there are plenty of thorns. It can be done, however, because one gets used to it by doing it daily and because gradually the multitude of tasks develop into a daily routine. The poor operators then rest. The good operators keep improving the routine, one detail on one day, another detail the next day, until they have a truly good operating routine, which then needs only close watching and periodic improving.

RAMIFICATIONS OF OPERATING, ESPECIALLY PRODUCTION

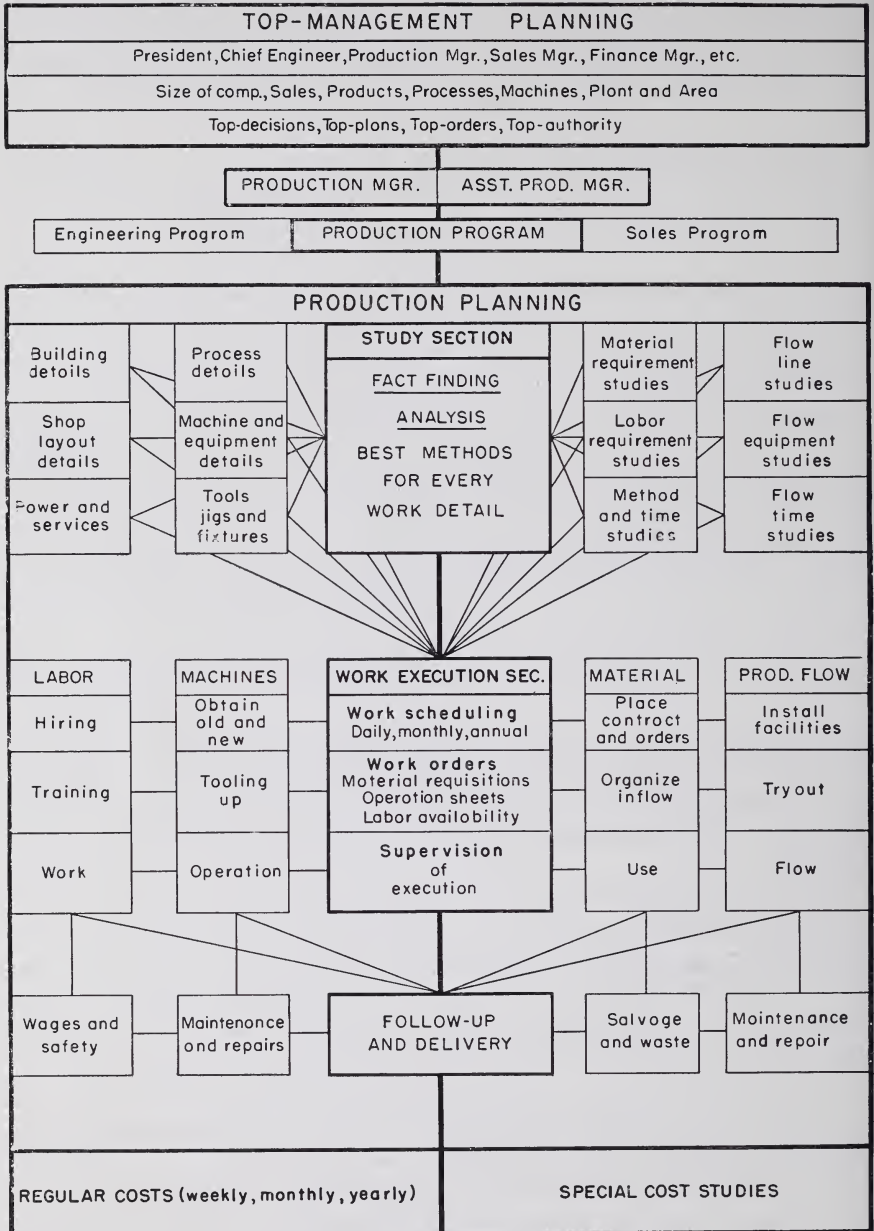
No attempt is made to present in this chapter a complete survey of all the detail tasks and detail activities that have to be taken care of in operating even a small plant as they arise in the daily work. Those detail tasks to be done by engineering, selling, and accounting are discussed in subsequent chapters.

Not to stress production but to use this part of operating mainly as the first illustration of the ramifications which have to be taken care of, some daily, and others from time to time, a chart is presented on page 184 which shows a rather complete picture of all the main kinds of activities arising in production. The same scope and ramifications exist in the large as well as in the small plants. The difference is only in the magnitude and in the complexities of the tasks.

Careful reading of the chart reveals not only how production is coordinated with top management but how it can develop its own basic production program from the engineering program and sales program.

Production planning, like all other planning, requires fact finding, analysis, and concluding on the best methods or ways of doing the work. It requires careful studies of many entirely different details and often the counsel of manufacturers or outside advisers.

THE SCOPE AND RAMIFICATIONS OF PRODUCTION



(Prepared by Edward H. Hempel.)

Work execution is the nucleus of operating and consists of work scheduling, work-order writing, and issuing of the daily work orders, which set the whole apparatus into motion and must be supervised to give such help as may be needed in setting up, trying out, and seeing the work through. Material has to be moved through as fast as possible.

Follow-up, delivery, paying wages, maintenance, repair, and salvage are necessary auxiliary actions of operating, and if provided for properly, they ensure the best execution. If neglected, they are the causes of many troubles.

Costs, either in form of regular cost determinations or in form of special cost studies for budgeting, appropriation requests, adoption of new lines of work, or general expansion of plant activities, are the concluding phases of operating.

While doing the daily work, every production manager must think and act in physical units or measures as the work requires, but he should be aware of the costs which his kind of operating produces at any time and also of how much it costs to operate (expenses).

SOME PRACTICAL POINTS ON OPERATING

In actually getting the daily work done it is important to observe a few basic, almost obvious know-how rules.

Good Work Performance Needs Preparation: Much time is lost and costs are incurred if everyone waits until the last second with "getting ready for work." In large plants specialists are available to do all the thinking and "indirect work" which is needed to get material on time, bring it to the operator on time, get the tools on time, set them up on time and in the best way, and move the workpieces on time to the next man.

In the small plant not many "indirect specialists" can be afforded, and no foreman alone can take care of all details. The desire to get ready, to get ready without overlooking half of the necessary preparations, and to move on his own or at least to speak up must be made part of each man's job. In most small plants the "get-ready-for-work phase" is badly wanting or purposely used to dawdle off part of the day.

Any man can get ready and nearly all are more proud of their work if they are *told in advance* and thus know "what will be next." The knowledge that there is a next job ahead for him makes any man more confident in his foreman and in the plant owner, and if he always knows what it will be, this becomes a challenge to get the present job done in order to start on the next one.

The worker, stock-room boy, clerk, maintenance man, or whatever he

may be who merely can act "on orders" or is smothered by rebukes for acting the right way on his own is bound to get sullen. He will "wait" as often as he can, will lose enthusiasm, and finally insist that he was hired to do only a certain kind of work and no other.

In the small plant, the "functional concept" of operating is costly indeed and should not be allowed to flourish, and even if each man must be classified for doing mainly a definite kind of work, they all should know that in preparing for work their cooperation is not only desired but needed. The foreman as well as the manager should make that clear, if necessary, also to the union.

Small Plant Operation Is Work Group Operation: In restaurants, where "efficient service" is necessary or played up as a special attraction, the waiters and waitresses help each other in clearing tables, bringing in dishes, and in many other "little things." They do not do this to please the guest. They do it to get "turnover" and thus more tips.

In the small plant, where good "service" is part of its existence, the man who never helps another to get things done is hardly in the right place. If anywhere, in the small plant all work must be group work.

A foreman who can think and act only in terms of individuals but who neither knows nor succeeds in having his men work as a group is not the foreman for the small plant. The unions always insist on having all men act as a group on most union issues, and the management and foreman must at least aim to have each specific group of workers act as a work group. Without genuine cooperation no small plant operating can become perfect.

Wages, Job Analysis, Job Rating, Time Study, and Wage Systems: Often the question is raised as to whether or not a small plant should install and use the "modern" techniques of labor management. In principle these management methods are as good and as useful in the small plant as they are in the large plant. They are practical, however, only if they actually help to improve operating, eliminate friction, help in creating a truly satisfactory wage structure, and thus help to maintain operating at a good productivity level.

As much as wage systems and incentive or bonus systems are stressed in books and in theory, practical operating soon proves that for every type of production and possibly for each shop section a definite wage and bonus system has to be worked out which may use some well-known standard pattern but which has to be modified to suit the specific needs of the work, the workers, the union, and/or the management.

The modifications and special conditions must be most carefully con-

sidered and thought out before any other step is taken, and definitely before any rumors are let out or discussions are started.

At no time has it benefited operating when new wage or bonus systems were forced suddenly upon a group or installed by surprise. In union shops as well as in others, discussion with foremen and stewards should always precede actual installation.

Wage systems and incentive systems do help operation. They can bring about some increases in work and even better cooperation among the men, perhaps also better quality of work, and more speed in flowing the work from operator to operator, from section to section, and thus through the whole plant and the entire work cycle.

At all times, however, it should be kept in mind that better operating is not obtained by aiming at low wages. Wages and incentives should be more or less in line with those locally prevailing or even better if better men are to be attracted and better operating is to be achieved. Equally important, however, should be the thought that wages and incentives are only one motivating force of operating and that they should not be made the main means or instrument for getting cooperation and good relations. There is more to good operating than can be obtained by financial inducements alone.

Materials and Products and Their Influence on Operating: The moving of materials as directly and as quickly as can possibly be arranged is as important for achieving best operating as getting the needed raw materials, transforming them into parts and products, and moving the product into the channels of distribution.

The volume of materials involved, the varieties, the specifications of the materials needed, the accuracy prescribed by engineering, and dozens of other technical details give to operating a different character in every plant. There is no way of commenting specifically on how material flowing, material working, parts assembly, and product shipment can best be done.

But there are a few fundamental thoughts which can be applied in every plant:

1. Material, parts, and products should be *flowed rather than stored*, inventoried, and recorded. Flowing is the essence of good operating.
2. Material should be engineered and worked on in such a manner that it can be *formed or transformed in a most direct and wasteless sequence of operations*.
3. Materials should be *inspected* as well as the parts and products made from them in order to avoid poor qualities and poor products which would defeat the good operating under which they were produced.

Statistical Quality Control and Similar Methods: There are some small plants that use these techniques to advantage; the greatest number of them, however, will derive much more benefit from improving their direct inspection techniques rather than from using statistical methods that concededly were developed for use in largest scale production.

Costs and Expenses to Be Considered in Operating: Since actual operating is mainly physical in character and offers sufficient difficulties of a technical and management nature, it should be only reasonable to avoid too much thinking of costs and expenses while operating.

On the other hand, since, through good operating, costs and expenses are to be reduced, it will be part of good operating to familiarize foremen and possibly also workers from time to time at shop meetings with some of the cost and expense aspects.

This need not to be done in the form of cumbersome statements; live discussion of figures and data compiled by accounting or furnished by some simple but good control is probably better. Such discussions are bound to alert the operating group as to its doings, help to inform them about cost and expense trends, and possibly prove to them the need for improvement to meet competitors who are offering their products at lower prices.

Paper Work and Record Keeping: How much paper work and record keeping should be done and by whom are minor but pertinent parts of operating. If too much is done in the office, the shopmen are bound to become "lost in the papers." If too much paper work has to be done by the foreman or workers, their work is bound to suffer, their information will need checking, and thus "administration" is bound to mushroom.

The arranging of a good and intelligent paper-work system is by no means an easy task of the operator, nor is it solved by simply having someone install a "control system," with many tickets, copies of tickets, records, filing procedures, and program sheets or scheduling boards. A modicum of such devices is necessary, but any avoidable paper work should be avoided. Recording and record systems are good only if they serve a practical, necessary purpose, and only then are they worth installing. Subject to the same criterion of "practical necessity and usefulness" are statistics of all sorts, charts, tabulations, tables, and above all weekly or other periodic reports. The last ones, in particular, can well be replaced by direct oral communications.

Meetings and Committees: These instruments of operating are definitely desirable, provided they are applied well and with discretion. Meetings should be held not too often, but at definite intervals, everyone concerned

should be invited to participate, everyone should be induced not only to listen in but to speak up, and as often as possible the manager should participate. Union men should not be excluded. The discussions ought to be frank and honest and give a clear picture of what the plant situation is and what future plans are being considered. Secretiveness, aloofness, tendencies at preaching or influencing are hardly helpful toward better operating. *A worthwhile program should be prepared for every meeting.* The worst meetings are those which are held merely in the hope that someone will have something to say.

There are so many different detail tasks to be fulfilled in operating and so many points of interest where improvement might be brought about that there should be no dearth of subjects.

Mechanical Devices (Gadgets): A plant where there are no devices that simplify the "indirect work" is not up-to-date. There are all sorts of small apparatus, auxiliary machinery, or knickknacks that are to be used as savers of "indirect time" rather than as working tools. To have them around costs very little but gives to the plant the air of up-to-dateness which good management will always aim to create.

General Facilities: Much valuable operating time can be saved if ample facilities are provided for the health and convenience of all employees. An extra drinking fountain or soft-drink dispenser in a convenient location may, and usually does, mean greater efficiency and work performance.

On the other hand, the small plant can hardly indulge in providing too many physical or recreational improvements assumed to better employee-management relations. Healthy working conditions, friendly treatment, and clean environment are definitely desirable. Anything beyond that deserves careful consideration as to its influence on operating before it is adopted and installed.

Housekeeping: It would seem superfluous to mention such an obvious need as good housekeeping, yet it is surprising how often it is neglected to the disadvantage of the management, not to speak of the absolute necessity for good operating. "To have a place for everything and everything in its place," as has so often been said, should be a basic rule.

In a well-run plant everything does have its place and provisions are usually made to have various housekeeping services performed as a matter of routine. However, every person in a plant should help to keep it in order. It requires little effort and means much, prevents accidents, and promotes general safety.

POSSIBLE BASIC SYSTEMS FOR OPERATING SMALL PLANT PRODUCTION

Quite a few management systems and methods now exist which have been evolved for operating shops or plants. They are described in most textbooks and especially well in Alford and Bangs, *Production Handbook*.² Therefore any one of these management methods will not be redescribed here in detail. But a brief appraisal is offered of those applicable to production in the small plant, so that the small plant manager may appraise his own operating and possibly may consider improving his system from this information.³

OPERATING BASED ON FOREMEN'S OR SECTION HEADS' AUTHORITIES AND RESPONSIBILITIES

If the right foremen and section heads are the mainstays of the operating system, their help is of inestimable value to the manager, and their interest in getting best performance should be inspired and encouraged as long as they operate satisfactorily.

Often, however, foremen and section heads are familiar only with the customary technicalities of their work. Many are not truly good work improvers. Some have other shortcomings, and most foremen and section heads do not know what their real functions are or should be. Accordingly, they develop a job routine of their own which they observe, whether it really helps or not to improve the established conditions. They are loyal, consider themselves as part of management, but do not want to "get in dutch" with the workers or employees, and thus they do not always see, hear, or speak up as they should.

In the small plant the role of the foremen and section heads actually should be one neither of complete authority nor of complete dependence. They should be comanagers and as such exercise the following tasks:

Operating Tasks of the Foremen

Foremen should

1. Have their say in *hiring or dismissal*, judging, grading, and assigning new or already working employees.
2. Undertake the *training* of newcomers and be responsible for the improving of all employees in their work.

² New York, The Ronald Press Company, 1946.

³ For technical know-how and mechanical production engineering improvements, see American Society of Tool Engineers, *Tool Engineers Handbook*. New York, McGraw-Hill Book Company, Inc., 1949. For other industries respective engineering handbooks should be consulted.

3. Participate in *wage discussions* and in the development of other financial rewards as may be desired by the management, union, or employees.

4. Pay careful attention to *working conditions* in order to obtain observance of company rules, avoidance of complaints, and fulfillment of laws and regulations.

5. Perform the *distribution of work* as planned in the programs and schedules for regular work and make effective arrangements for the performance of irregular work.

6. Watch, supervise, and improve the *methods of work* as applied in each work operation by every employee of their group.

7. *Develop best methods of work* wherever the situation requires or permits.

8. Establish *work times or time standards* fair to management and the employees and give such counsel and help as are suited to fulfill them.

9. Check the *fulfillment of schedules* not only for each individual job but for the daily programs and take steps to remedy deficiencies or nonfulfillments.

10. *Check*, in particular, facilities, machines, tools, tool setups, fixtures, jigs, controls, and mechanisms used to obtain good work performance.

11. *Improve facilities*, machines, tools, tool setups, fixtures, jigs, controls, and mechanisms in order to obtain still better work.

12. Observe *safety conditions* in all and every point of possible danger and create greater safety wherever needed.

13. Inspect personally the *quality of the work* of each employee as often as possible but at least every week, not to criticize but to make sure that quality is achieved, regardless of other inspection routines.

14. Inspect personally the *quality of all facilities*, building, floors, walls, windows, roof, equipment, machines, and other assets so as to prevent their breakdown or danger to employees.

15. Supervise and study carefully the *flow of work* from workplace to workplace, from beginning to the last operation within their responsibility in order to avoid accumulation, lack of delivery, or other wasteful handling or transportation.

16. Hear promptly *complaints* and act fairly and expeditiously on grievances, regardless of their being stated by an employee directly or through the union representative.

17. *Give help* in technical and management problems as may arise with any one worker or group of employees.

18. *Interpret management's plans*, programs, or other measures to the members of their group.

With all these tasks of good operating to fulfill, no foreman can really consider himself as not being part of management.

In order to have good foremen or section heads, it is quite definitely necessary that management offer them confidence and cooperation, which often enough they are not shown.

OPERATING BASED ON TIME STUDIES AS MEANS TO OBTAIN BETTER OPERATING

To overcome foreman deficiencies and to create best performance directly in the worker, time study has been adopted widely and made the main feature of a system of operating which is applied also in small plants.

Time study has been introduced to determine the correct length of time which work operations should take. These studies are being used to set adequate standards of performance for work operations, and the time standards are used as bases for incentive-wage payments of various sorts, which become the main motivating forces of the time-study operating system.

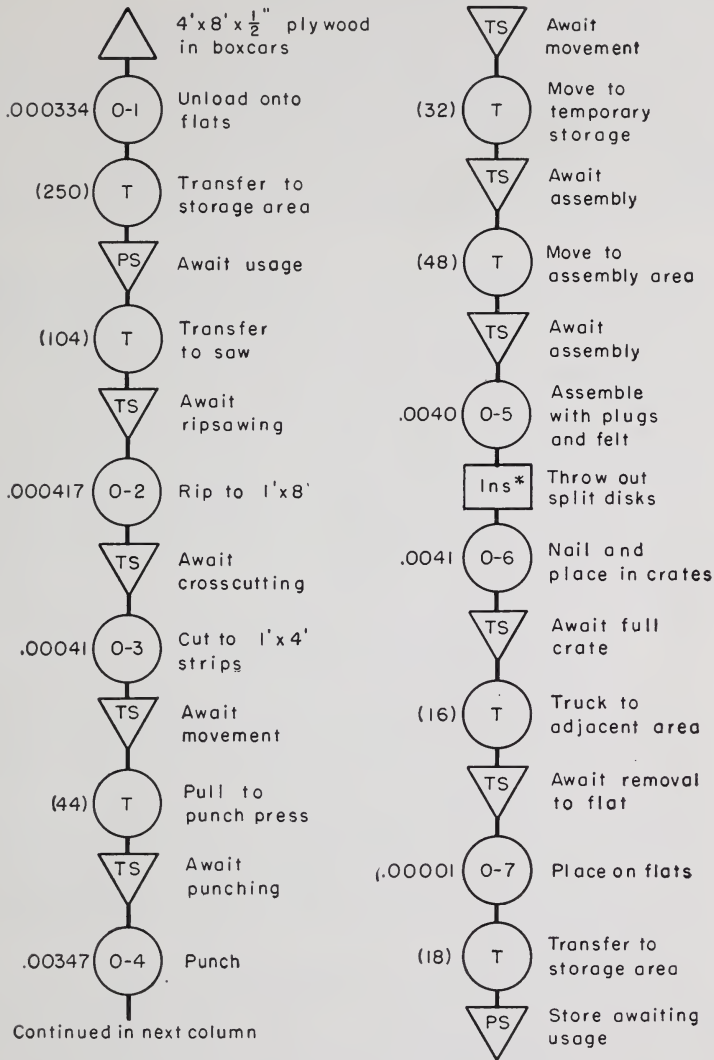
At first highly extolled as the best means for obtaining best performance, in recent years time study has been stripped considerably of its long-lasting glamour. The best men in this field now recommend "synthetic" time study,⁴ a new technique for estimating the time required for any kind of work. They use as a basis the necessary "elemental motions," which are determined first and then are translated into time requirements by the use of a few tables, from which quite accurate total time estimates can be computed. In reference to these new techniques Harold B. Maynard stated at the Third Annual Time Study and Methods Conference of the Society for the Advancement of Management and the Management Division of the American Society of Mechanical Engineers (Apr. 8, 1948): "The new table can be memorized in 5 minutes by anyone who is familiar with the basic methods."

The small plant manager will do well to follow closely these new developments in the field of time study. If applied in their old forms stop-watch time studies are costly, time consuming, and elaborate techniques, with many possible variations in computation and therefore are none too reliable in their findings or standards. Unions, now also performing time studies by their own engineers, often insist on participating in setting time standards, and if they desire, they can cause considerable trouble and delays. Those

⁴ Quick, Shea, and Koehler, "Motion-Time Standards," *Factory Management*, Plant Operation Library No. 86. New York, McGraw-Hill Book Company, Inc., 1945. R. A. Olsen, "Setting Time Standards Without a Stopwatch," *Factory Management*, Vol. 194, No. 2, February, 1946, pp. 92ff. and Vol. 104, No. 3, March, 1946, pp. 127ff. Maynard, Stegemerten, and Schwab, "Methods-Time Measurement," *Factory Management*, Plant Operation Library No. 109. New York, McGraw-Hill Book Company, Inc., 1948.

GOOD FLOW PROCESS CHART BUT INCOMPLETE TIME STUDY

FLOW PROCESS CHART
Showing flow of plywood



Decimals show times in hours; whole numbers in parenthesis distance in feet.

Times shown include all transportations down to the next subsequent operation. Storage times not shown.

*Included in preceding operation.

The chart shows operating times with great accuracy but fails to show the more important idle times. See PS and TS times.

interested in the union opinion of time study will find William Gomberg's *A Trade Union Analysis of Time Study*⁵ most enlightening.

The greatest shortcoming of time study as now performed and as far as the small plant is concerned is that it concentrates its attention on work times and determines them correct to the decimals of 1 minute while it most often overlooks the idle times that are the real cost-creating and time-delaying factors and thus the most wasteful portions of operating. The chart on page 193 shows such a study, which is merely a sample of thousands of others.

The small plant manager, aiming at best operating, would need exact data on the idle times much more than exact data on work times, because by studying and taking the proper steps to eliminate the idle times he could really save. Idle times related to "work times" show ratios of 3 to 1 in the best operated and fully mechanized automobile plants and thirty to forty times more "idle time" than work time in many small plants if the entire "production time cycle" is considered. This is the time from receiving the material to the date of delivery in form of finished products. For setting standards for incentive wages, time study, however, still serves well wherever an incentive-wage system is desired.

MOTION STUDIES AS MEANS TO OBTAIN BETTER OPERATING

Developed by Frank B. Gilbreth⁶ and Dr. Lillian Gilbreth as a special branch of management for the improvement of manual work operations, motion analysis always has been the basis for time study, and it is becoming more and more a most important corollary for planning, operating, and improving all kinds of work. Its main purpose is to discover and eliminate unnecessary and therefore wasteful motions, so that the worker can be trained to do the work more effectively and thus do more work in the same time, often with less effort.


















All manual work was found to be performed through different basic motion elements which were called therbligs (the reverse of Gilbreth). Seventeen motion elements and their symbols are shown opposite. The symbols and the whole technique of motion study are used to make operation charts and to state all motions required, which then are time-studied so as to obtain good time standards.

Allan H. Mogensen, then assistant editor of *Factory and Industrial Management*, aided greatly in salvaging time study and motion study from misunderstanding and misapplication by his book on *Common Sense*






⁵ Chicago, Science Research Associates, 1948.

⁶ Frank B. Gilbreth, *Motion Study, A Method for Increasing the Efficiency of the Workman*, New York, D. Van Nostrand Company, Inc., 1911.

THE THERBLIGS AND THE ASME SYMBOLS FOR FUNDAMENTAL HAND MOTIONS

| Name of Symbol | Therblig Symbol | Explanation suggested by | Color |
|-----------------------------|--|---|---------------|
| Search | Sh  | Eye turned as if searching | Black |
| Select | St  | Reaching for object | Gray, light |
| Grasp | G  | Hand open for grasping object | Lake red |
| Transport empty | TE  | Empty hand | Olive green |
| Transport loaded | TL  | A hand with something in it | Green |
| Hold | H  | Magnet holding iron bar | Gold ochre |
| Release load | RL  | Dropping content out of hand | Carmine red |
| Position | P  | Object being placed by hand | Blue |
| Pre-position | PP  | A nine-pin which is set up in a bowling alley | Sky-blue |
| Inspect | I  | Magnifying lens | Burnt ochre |
| Assemble | A  | Several things put together | Violet, heavy |
| Disassemble | DA  | One part of an assembly removed | Violet, light |
| Use | U  | Word "Use" | Purple |
| Unavoidable delay | UD  | Man bumping his nose, unintentionally | Yellow ochre |
| Avoidable delay | AD  | Man lying down on job voluntarily | Lemon yellow |
| Plan | Pn  | Man with his fingers at his brow thinking | Brown |
| Rest for overcoming fatigue | R  | Man seated as if resting | Orange |

Standard Process Operations

-  Operation
-  Transportation
-  Inspection
-  Delay
-  Storage

SOURCE: Ralph M. Barnes, *Motion and Time Study*, New York, Wiley & Sons, 1949, pp. 96, 31. Also ASME Standard, *Operation and Flow Process Chart*; ASME, Special Committee on Standardization of Therbligs, Process Charts and Their Symbols, New York, ASME, 1947.

*Applied to Motion and Time Study.*⁷ He stated clearly what motion study was intended to do and gave practical guidance toward fulfillment of Frank Gilbreth's quest FOR ONE BEST WAY OF DOING WORK. He also supported strongly the recommendation made by Dr. Lillian Gilbreth, who had advised: "There is too much study of WORK THAT SHOULD BE ELIMINATED, NOT STUDIED."

The more recent techniques of synthetic or elemental time studies not only use but definitely require the knowledge of motions for the basic formulation of work requirements and also for making time estimates. But now only eight or four motions are used, and with the use of tables showing time allowances for each of these elemental motions, time estimates are made which do not require actual time studies any longer. In this form motion studies are very useful indeed, especially in the small plant.⁸

Motion studies, thus, have found a new application, and they fulfill the highest purpose for which they were originally developed by the Gilbreths when they are used in connection with perfected methods-engineering studies and applied for the purpose of method improvement or method simplification. All combined aim to facilitate work and are part of the great, rather new, and still evolving field of industrial engineering.

METHODS ENGINEERING AS MAIN MEANS OF A BEST OPERATING SYSTEM

While most techniques so far described aim to obtain better operating either through foremen and supervisors or through studying the workers and the time and motions which they as individuals use or should use, often astoundingly better operating can be obtained and also better management can be created through the application of methods-engineering methods.

Man is only one element of the work performance. He is the most difficult to improve and the most troublesome. Processes, machines, tools, equipment, facilities, and above all, methods do most of the work. Improving them requires more knowledge, more ability to analyze the physical work elements, but improvements of this kind give better results in operation and find no resistance from the elements concerned.

Management still has the right to introduce technological improvements, and methods engineering aims to do this wherever such opportunities exist. The opportunities are limitless, because there is no work technique, no process, no machine, and no method that could not be improved by elimination of weaknesses or of wastes in some form.

⁷ New York, McGraw-Hill Book Company, Inc., 1932.

⁸ For details the same sources should be consulted that were given for elemental time study. See p. 192.

Methods engineering begins where the design and process engineers and the engineering of the machine, tool, and equipment manufacturers leave off. They continuously improve the tools of production for better operations and special applications. But they cannot improve all the operating details which are created in the plants by those who manage operating.

At one time or other, all work was done by men and their hands. If now 90 per cent of all work is done by machines and tools, the last 10 per cent is the work for which machines and tools or at least mechanisms which would facilitate it still have to be developed. Besides, wherever there is still a trace of waste or unnecessary cost, methods engineering can aim to eliminate or at least to reduce it.

There are so far only few worth-while texts on methods engineering.⁹ But there are millions of cases where intelligent workmen and foremen or production engineers have applied methods engineering to improve some operating details, not by speeding up a man, but by the application of "ingenious horse-sense engineering." They have done it in every kind of industry, in every process, in biggest and in smallest plants, in many entirely new ways, as well as by the application of the oldest and simplest laws of physics, mechanics, or any other field of the physical sciences. It is a line of engineering without limitations and pertains not only to mechanical production but also to all branches of engineering, to sales work and distribution, as well as to any other activities which still use wasteful methods.

Only if one tries to survey at least the main areas where methods engineering can be applied does he realize how different and superior this basic approach to operating really is if it is made the main feature of the operating system.

The actual installation of methods improvements is well within the possibilities which can be considered in the small plant. It needs, above all, the intention to do it, a man who has learned how to do it, and foremen instructed to help these improvements along. The chart on page 184 indicates quite a few points where a start can be made.¹⁰

HOW TO IMPROVE THE ELEMENTS OF OPERATING

Few are the operators who still believe that *men* can be improved in their basic characteristics as workers or as employees beyond what they are after having been well treated, well trained, and well paid. As much as a

⁹ H. B. Maynard and G. J. Stegemerten, *Guide to Methods Improvement*. New York, McGraw-Hill Book Company, Inc., 1944. Ralph M. Barnes, *Work Methods Training Manual*, 2d ed. Dubuque, Iowa, Wm. C. Brown Co., 1949.

¹⁰ For examples see also Chap. 18, "How to Make Savings and Use Profits," p. 448.

manager may try to create best operating through men, more men, or better men, men have their limitations in creating best operating as men alone.

Machines, tools, equipment, mechanisms, and any kind of physical facilities can be improved almost ad infinitum. They can be modified for biggest and smallest tasks and any tasks in between. They can be adjusted and re-designed to suit different tasks, to do heaviest or lightest kinds of work. They can be made to do different kinds of work either in quick succession, simultaneously, at definite intervals, or in any degree of automatic action. Physical facilities do not preclude improvements unless the engineering thinking which was built into them was wrong or defective. Machines and related objects, therefore, are ideal prospects for improvement toward better operating.

Table 1 shows some of the possibilities for improvements that are known to be obtainable by tool and machine improvement in mechanical industries.

TABLE 1. SOME POSSIBILITIES OF WORK IMPROVEMENT IN THE MECHANICAL SHOP *

| | Outputs |
|--|---------|
| Through the use of best suited tools: | |
| Regular, simple hand tools | 1 |
| Special hand tools (same man) | 2 |
| Portable, special, power hand tools | 3-5 |
| Movable (heavy), special, high-speed, power hand tools | 5-7 |
| Through the use of best suited tool bits or arrangement: | |
| Regular, carbon steel, forged, ground | 1 |
| Improved, carbon steel, well forged, well ground | 3 |
| Alloy or heat-treated high carbon, well prepared | 3-5 |
| Carbides or similar highest speed tools | 5-10 |
| Use of suitable coolant doubles output of tool setup. | |
| Honing of tool edges prolongs tool life two to five times. | |
| Multitool setup gives multitudes the output of one tool used. | |
| Use of jigs saves one-fifth to two-thirds of tool-positioning time. | |
| Use of fixtures reduces work-placing times for as many pieces as the fixture may hold. | |
| Use of special machines with fixtures, etc., has produced as high as twenty times the simple machine output. | |

* Data by Edward H. Hempel.

SOME POSSIBILITIES OF WORK IMPROVEMENT IN CHEMICAL AND SIMILAR PLANTS

The possibilities of operating more effectively also in these industries by elimination of waste in form of space, time, transportation, or work are best demonstrated by the transformation of batch processing into continuous processing and by many similar improvements that now produce five to twenty times as much in the same time as was produced with simpler processing methods.

The uses of heat, cold, chemical actions, steam, electricity, air, and other production elements, too, have been expanded, first in small scale and finally in large scale, far beyond any original concepts of engineering and with amazing savings in costs.

Improvements in operating details, introduction of automatic controls and operating mechanisms, and automatic transportation installations are far more extensively applied in the small nonmechanical plants than in the mechanical shops that cling to more primitive equipment.

THE EFFECTIVENESS OF VARIOUS OPERATING SYSTEMS

When all points so far discussed are carefully weighed and an attempt is made to develop a distinct system of operating, the choice should by all means consider the possible final results to be obtained. It is certain that any primitive system can give only primitive results. This is proved by the existence of all the small plants and shops that never rise, never seem to grow, just keep on existing, or die off in large numbers.

It is also certain that, as more thorough management thinking and actions are applied, even the smallest plant has a chance to progress, to grow in size, activities, employment, engineering, sales, finances, and all other operating activities. It is much easier to modernize a small plant than a large one.

Operating does not just happen; it is only as good as it is managed. As far as is known, no attempt has been made to ascertain clearly and measurably the results which various modes or systems of operating have created or are bound to create. Engineering, sales, financial activities are mostly operated only "somehow," especially in the small plants, and that applies also to production.

Yet, if a forward-looking, aim-conscious kind of management is a necessity and is to be applied toward the achievement of better operating, it should be worth while to sketch out at least approximately the degrees of improvements which various systems of operating hold out to those who dare to think of achieving them and then take proper actions to make them a reality. No plant is so small that it could not be thought of as a bigger plant and finally as a big concern.

The kinds of operating systems that can bring this about must gradually be developed from their primitive forms into higher, more refined, more elaborate systems of operating. Besides, the performance of all activities must be improved uniformly into higher systems of engineering, production, sales, and financial work if a uniformly higher system of operating is to result.

In all this evolution, production always has and probably always will set

the pace, and fortunately it is now possible to attempt the establishment of a scale which will show what the various systems of operating are bound to achieve at least in terms of physical production.

TABLE 2. IMPROVEMENT OF PRODUCTION UNDER VARIOUS KINDS OF OPERATING SYSTEMS *

| Management system | Operating conditions | Production index, per cent |
|---|--|--|
| 1. Good foreman | Good machines, good tools, good workers, little planning | 100 |
| 2. Incentive system, based on time study | Same as above, plus incentives | 125-140 |
| 3. Some scientific management, Gantt charts, tickets, records, etc. | Plant, machines, men still same; simple detail planning | 140-175 |
| 4. Planned management, plus technical know-how in machines, layouts, detail production planning | Better machines, better methods, better men, better flow of work | 175-250 |
| 5. Know-how planning, know-how organizing, know-how operating, know-how supervising | Best plant, best machines, best methods, best men | 250-400 in some cases more, dependent on industry |

* SOURCES: Numerous articles published during the last 20 years in *Factory Management and Maintenance*, *Automotive Industries*, *Mill and Factory*, and similar magazines. Prepared by Edward H. Hempel.

HOW TO CHANGE A SIMPLER OPERATING SYSTEM INTO A BETTER ONE

Improvements and higher types of operating systems are not created by theoretical thinking. They must be created by management leadership, which requires that from time to time the operator take stock and appraise the kind of operating system that prevails.

If circumstances permit and the general outlook justifies the introduction of a better system, the manager should make the possibility and desirability of the improvement known to those of the associates affected. In this manner he himself as well as all others can prepare the specific plans and sugges-

tions, which then can be coordinated and combined into a definite plan and procedure, or he should call in someone who knows how to do this.

The main points for improving any operating system are proper timing, actual determination really to make the improvement, and last but not least to make everyone interested in actually bringing the improvement about. Long-harbored ideas should be considered, and loose ends should be tied in with the main thoughts.

The small plant is just as much in need of system improvement and possibly more so than the large plant. The earlier the need for system improvement is recognized the less are the costs of any one step and the earlier the improved system will save costs by providing better operation. Delays in improvements cost more money than the improvements themselves, which, installed in time and in such perfection as can be afforded, would make possible further improvements. Probable growing pains are difficult to overcome, but on them depends the transition from one operating system to a better one, on which depends the progress of the small plant.

SUMMATION ON OPERATING

Most articles made now in great volume are made that way because some rather small producer improved his operating and management.

Good and even best operating is not the privilege of the large plants. It can be aimed at in any plant, but

1. Good operating can actually be achieved only if *preceded by good top-management planning and good organizing.*
2. Careful *program making* must be applied for all the detail work to be done.
3. Detail operation planning based on continued *study of operation* details and process phases must aim to find the best methods of doing work.
4. The execution of work plans should be *based upon machines and methods* rather than upon men.
5. *Coordination of machines, methods, and men* should aim to *eliminate all wastes.*
6. A best suited *system of work and operating* should gradually be evolved.

If these steps are taken, then supervising and controlling the small plant can be improved and fitted into the better scheme.

CHAPTER 8

SUPERVISING AND CONTROLLING THE SMALL PLANT

BY

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Basically, the same know-how is required to supervise and control a small plant properly as is required for the guidance of a large corporation. There is a difference, however, for the supervision and control tend to become more careful and less personalized in the large company, while in the small plant both tend to become more personalized and less careful. The difference is caused by the closer personal contact that the small plant manager has with operations and with all his men in the plant.

To attain the goals which have been planned, the supervisor of a small plant has a full-sized task before him. Good organization and good personnel are necessary, but the goals planned can be reached satisfactorily only if supervision and control are applied to cover and check *all* the related activities and their progress during *all* stages from the beginning to the end.

The essence of the fourth phase of management, therefore, must be "best" supervision and a clear knowledge of those facts which will show what progress has been made and what conditions prevail in each stage of the activities. If real leadership is applied and real facts are made available, both will combine into immediate appraisals and sound decisions regarding necessary and possibly corrective measures. These findings are needed to fulfill the immediate purposes of management and as a basis for obtaining progress in the future.

MEANING OF SUPERVISION

Supervision is the authoritative guidance of any activity from its inception through the various stages of its progress to the final achievement of its objectives. It poses a human-relations problem of the first order, in so far as

¹ The author is a member of the Executive Committee of the Management Division, ASME.

a good supervisor must be able to make men willingly do what he as manager wants them to do.

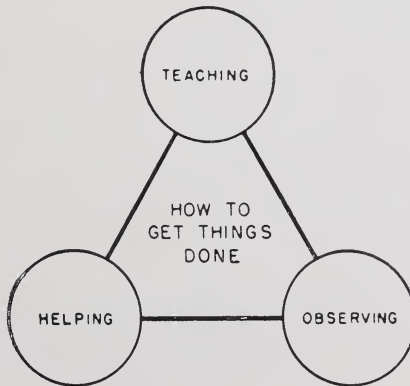
The Difference between Supervision and Control: Supervision is frequently used as a synonym for control and vice versa. Few small plant managers ever stop to ponder the real meanings of these words or the difference between supervision and control. Few managers actually establish supervision as it should be, and still fewer use the right controls to aid them in guiding their progress.

If, as stated above, supervision is leadership and authoritative guidance, it means directing or overseeing the work. Control then becomes the technique of gathering those facts which will reveal how thoroughly, through the various work stages, the plans are being carried out. Controls complement good supervision by indicating *what* measures may be necessary and *where* special supervision, *i.e.*, guidance, must be applied, especially in those places where the conditions are most in need of improvement.

Clearly, then, there is a difference between supervision and control which is of importance, especially in the small plant, whose manager must rely on being a good supervisor even more than a good controller. More often than not it is uneconomical, both financially and because of the lack of help, for the small plant manager to install elaborate controls covering every minute activity or its results, but at all times and in all activities supervision must be first rate if weak spots are to be avoided or to be corrected.

The Scope of Supervision: A good small plant superintendent, supervisor, or manager has quite a range of possibilities and also various means for making himself felt, respected, and obeyed. He need not pound the table, threaten with dismissal, or use abusive language or techniques. In fact, all these characterize the poor supervisor.

SUPERVISING MEANS



The best managers prepare for best supervision by planning right, organizing right, and then using best management and engineering methods for operating. If these have been done well, supervising then merely has to teach, stand by, correct the troubles that may arise and get things done in engineering or in the research phases, in manufacturing, in sales activities, or in the accounting of the financial facts.

Supervision in its best sense means (1) teaching men how to do their work, (2) helping them when they fail to grasp the idea and do not know how to carry out the work, and (3) observing them to see that they are doing the work properly and following instructions. *Teaching, helping, and observing* are the elements of know-how supervising.

HOW TO APPLY SUPERVISION

The creation and upholding of discipline in reference to work methods as well as to general behavior within the plant cover part but not all of the activities of supervision. This is the old and incomplete idea of supervising; the supervisor must be more than a disciplinarian.

How workmen and office workers are taught to do their work is more important than insistence upon discipline, because in the process of teaching they not only are taught the exact work methods that are desired but are at the same time made aware of the supervision which will follow, and of the degree of fulfillment which will be expected of them.

Learners, workmen, and office workers are usually keener observers than their supervisors realize, and when at the very start they are introduced to their work and taught the methods in a slovenly, careless, or inefficient manner, they will not turn in good work. Supervising them will be difficult.

Equally devastating is the effect when supervision asserts itself in too stern, domineering, nagging, cold, policing, sarcastic, or constantly kidding forms. Any individual so supervised loses confidence and is bound to become a poor performer, if not an objector.

"Leaving a worker or employee alone," a kind of supervising believed by many to achieve best performance, is good only if he or she has been shown in a friendly, serious, and careful manner how to do the work and after it has been proven in a courteous way that the method shown is best.

Supervision which is so strict that an employee would rather not ask for help when he needs it or supervision which is so careless that it does not see or does not step in when work is not done the way it should be done is not good supervision.

Honesty in teaching, in helping, and in stepping in whenever justified is probably the essence of best know-how supervising, be it applied to workmen, office workers, foremen, or even at higher levels. Only the manager or

supervisor who is honest with himself and with others is bound to command the respect and the following of all those who work for him. The pretending, faking, and dabbling supervisor never has gotten far with his men. They see through him and act accordingly before he recognizes his own shortcomings. And so do the shop stewards and union representatives.

Good supervision definitely is not a matter of psychological tricks as some try to make believe. The best supervisors get best results, not by applying psychological theories, but by using common sense, and by being with and for their group what the good manager should be: a teacher, helper, and serious overseer.

CHARACTERISTICS OF GOOD SUPERVISION

No two successful supervisors are exactly alike. There are, however, certain basic qualities which they are bound to have in common and to apply in their supervision in order to obtain satisfactory performance:

1. *Leadership*: The ability to inspire others to do their best. This requires personal integrity, competence, character, and a sense of personal responsibility to the people supervised. It requires actual, practical, and applicable knowledge of how actions can be carried out. It includes the ability to get other people to *want* to do things. Employees, if given a goal, a sense of direction, something to strive for, do recognize such leadership.

2. *Common sense and a sense of values*: The ability to make sound decisions. As the good judgment of the supervisor grows, his ability to put first things first, even under heavy pressure, increases. This quality involves discrimination between the important and the unimportant.

3. *Organization and coordination*: The ability to obtain and set up such physical and mental provisions as would help to carry out plans with the greatest facility, the ability to divide the work to be done among the workers so that each has his proportionate share in line with his ability and in such a manner that idle time is minimized or eliminated and the product is completed most readily and economically.

4. *Fairness*: The ability to give credit where it is due but also to correct mistakes. To be completely fair one must also be considerate and be consistent in one's actions. The ability to build up the workers is also necessary. Of equal importance in developing fairness is learning when and how to criticize. The best supervisors *criticize constructively and in private* and *praise in public*.

5. *The ability to teach*: One of the most essential qualities of a good supervisor is the ability to teach the employees what is to be done. The most effective teaching requires that one *tell* and *show*, and in small enough doses so that everyone can assimilate the instructions.

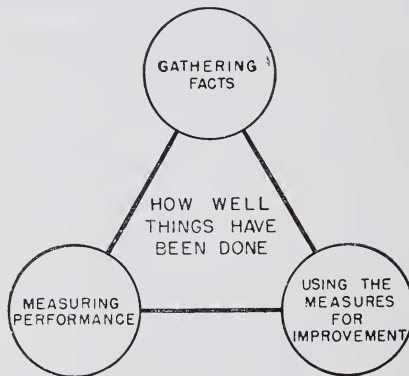
6. *Ability to guide, interpret, and convey to workers policies and practices:* It is essential not only that the good supervisor, even in the small plant, be able to interpret and convey to the workers the policies of the owners but that he apply them. Consistent application of the selected policies is part of developing an excellent working team. For the employee group to do an intelligent job, they must know and see that rules exist for all. It is equally important for the good supervisor to be able to convey to the owners the problems of the operating level, of the individuals, and of the group.

While the above are not all the qualities to be desired in good supervisors, they do include those qualities generally conceded to be most important to sound supervision.

MEANING OF CONTROLS

Supervision plus work give performance. The quality of supervision plus the quality of work give the quality of the performance. Only if the qualities of best supervision and work are ascertained carefully and obtained continuously and the proper conclusions are applied can highest quality of performance be attained.

CONTROLLING MEANS



Control is based mainly upon the observing which has to be done as a part of supervision. One can observe and correct or improve without making a record and thus begin to control in the most primitive, impressionistic way. Or one can observe and make records of the facts ascertained and then correct and improve. This is bound to give a control based on facts and figures, which, if done properly, gives a control that is more convincing and has a more lasting effect.

The value of any control depends on the reliability of its facts and findings. Control findings are useful only if they can be expressed in the form of appraisals which measure and evaluate the quality of the performance actually obtained and also furnish the basis for the constructive criticism which is characteristic of good supervision.

The *establishment* of controls, as a complement to supervision and as a means for making supervision most effective, is neither difficult nor very costly, nor does the *application* of control require highly skilled personnel. Care, however, and know-how are needed to create an effective and convincing control.

The Scope of Control: Any manager or supervisor must decide

1. If he desires controls at all or wants to do without them
2. How much control he needs to install and use to meet his requirements
3. Which methods, techniques, and systems of control he wants to use in his plant and on his people
4. What actions, activities, and conditions are important enough to be controlled, in order to obtain uniformly good performance in all parts of his enterprise.

If all these aspects of establishing the scope of control are considered together, it becomes obvious that one can easily do too little or too much in terms of control. If one considers further that by now quite a few methods and varying degrees of fine detail control have been developed, it should become clear that the choice of the best kind of control is by no means an easy decision to be made by the manager of the small plant.

The best managers decide on their controls and prepare for best control by studying the quality of the supervision which is applied. If supervision is genuinely good and produces good performance, only a minimum of control may suffice for the time being. If, however, the performance is not so good as may be desired, one or another form of control should be developed and applied.

Control in its best sense means (1) gathering such facts and figures that would be indicative of activities performed, (2) measuring the quality of the performance obtained in these activities, and (3) using the quality measures for guiding the men, for better planning or improved organizing or more effective operating. Observing thus is extended by the controls into *fact finding, measuring, analyzing, and application of the conclusions*. These are the elements of know-how controlling.

WHICH SYSTEMS OF CONTROL?

Many types of operating controls are found in small manufacturing plants; in general, they can be divided into five groups:

1. *No Control:* Very often and especially in very small plants, the supervisor relies entirely on his observation and memory for control. This is one sure way to poor supervision, since it is a common weakness of the human mind to forget the things it finds unpleasant. In this type of plant, one usually finds that the manager has only a vague idea of what actually has taken place and what constitutes operating costs. He is unable to make any decision intelligently because he lacks the fundamental knowledge of the quality of the performance achieved and of his costs. With this type of control any business is certain to remain weak, owing to lack of adequate knowledge of actual costs and their relationship to expected costs and owing to lack of adequate knowledge of the ratio of actual to expected performance.

2. *Skimpy Control:* This type of control uses some not well-chosen facts and figures and thus obtains measures that give the supervisor only an incomplete and often distorted picture of the operation of his plant. It is virtually impossible for the supervisor really to improve performance under this system. He might well think he has his company and costs well under control, while if a more detailed record were kept, showing all the performances as well as costs, he might find that, instead of a good performance, he was actually losing money in the operation of some activities and possibly of the enterprise. This type of skimpy control also results in very poor relationships between the manager and his operating men, since the supervisor cannot give a clear and convincing picture of the activities of any one department or working group.

3. *Good Control:* To obtain a good control over a small plant requires a good record system or at least well-chosen statistical data which can give management a clear picture of at least the most important activities in the plant. The records should be broken down to cover these specific important fields.

In order to obtain such control, it is necessary that the manager decide most carefully what is important enough to be controlled—which figures or data would be best for measuring—and then he must construct the control itself.

4. *Financial Statements as Controls:*² Many managers do not establish any special controls or control system but simply use the monthly statements prepared by their accountants as the most convenient and already available means of ascertaining their financial status and possibly of discovering any trends for better or worse in their operations.

As long as the statements are well prepared and the accountant possibly supplements them by his own analysis of conditions, this system of control may well serve the needs of the manager.

Always, however, financial statements, although they may be well prepared and correct, are strictly in dollar values; all ratios and correlations among figures are on a monetary-value-relationship basis. Thus they are subject to changes in physical content. A control based mainly on financial statements and financial figures only, seems to lack the penetrating quality which careful observation should insist upon. This is especially true in times of numerous changes in prices, costs, and other values.

The least that should be done with financial statements is that they should be supplemented by statistical data sufficient to make a fairly intimate analysis of the conditions not only in dollars but also in units of production. If this can be done, the information obtained from both sources may suffice to appraise the true conditions in

Assets and liabilities

Capital and surplus and changes thereof

Net sales

Cost of sales

Selling expenses

Production expenses

Cost of materials

Cost of direct wages

Net income

Tax requirements

Net profit.

Cash, orders on hand, shipments, and similar data may help to round out the information.

5. *Budgetary Controls:* The use of budgets to aid in controlling costs has proved to be helpful in many cases. The most effective budgets are those which are based upon sound forecasting and which are modified or adjusted on a monthly or quarterly basis. In planning a financial budget it will therefore be necessary to develop sound estimates of the various factors

² For further details see Chap. 16, How to Do and Use Accounting.

affecting costs. Managers who have had success with budgetary and cost-control systems frequently prepare material and labor budgets based on past performances on a physical-unit basis as an aid to forecasting costs.

The primary value of a simple financial budget, which is kept up-to-date and reasonably enforced, to the small plant manager is that it acts as a deterrent against unnecessary expenses. As each authorization for expenditure is compared with the budget estimate, it encourages the manager to ask himself—Is it necessary, is it economical, can I do it another way, or can I use something I already have in stock? As such it can prove to be a valuable adjunct to physical-unit data and actual data on costs.

HOW TO DEVELOP EFFECTIVE CONTROLS

Work of any specific kind is done and should be controlled essentially in physical terms and units. By studying these data as they are, but better still by correlating suitable data one with another, one can begin to measure the quality of most performances. All performances, however, can be summarized only in terms of monetary-value controls, which can be established by using figures on costs and values. Using such data one can construct controls that will measure the performance of the whole enterprise combined.

1. *Physical-unit Data:* In the small plant there cannot be a large statistical department, but at least simple records should be available which would show daily unit production, number of workers who produced it, daily man-hours worked, daily sales, quantity or weight of outgoing shipments, quantity or weight of incoming materials, amount of rejects, and similar simple data that after a while permit a check on the quantity and also the quality of the performances that were achieved by certain sections.

Physical unit data are fairly simple to establish, to understand, to relate with each other, and thus they can well be made the nucleus of an efficient kind of control. Such data are most effective if developed separately for each product.

2. *Monetary-value Data:* Where there is a fairly good or a good accounting system, some of its data should be used for control purposes in such a manner that the money values will complement the physical-unit data of the control.

In view of price changes, cost changes, wage changes, and transportation-cost changes, monetary values are not strictly comparable from week to week, still less from month to month, and rarely from year to year. The

1939 dollar is different from the dollar of today or tomorrow. Nevertheless, money-value controls have many good points if they are well established, cross-checked by physical-unit controls, and finally analyzed and interpreted to determine how the performance of any section or of the whole plant might be improved.

3. *Establishment of Performance-quality Measures:* By mere comparison of physical data, for instance production in pounds made today, yesterday, and the week before, one can begin to *measure* performance and state that today's production was better or not so good as yesterday's, and so on. One can do the same for sales stated in units sold and for expenses or costs stated in dollars for various days.

This sort of measuring, however, considers only the end results of the activity but not the physical or monetary expenditures which have been applied to produce the results. A good control will, therefore, aim to correlate the physical or monetary expenditures applied in any activity with the results obtained and thus will obtain *indexes* which are more informative measures of performance than the end-result data alone. If today 16 units were made by 16 men, this means 1 unit per man. But if yesterday 18 units were made by 19 men, this means only $1\frac{8}{19}$ unit made per man, so that today's result is less and apparently worse, but the work performance was in reality better than yesterday's.

The best correlations and performance measures are those which are obtained from physical unit data, such as pounds per man, pounds made per man-hour worked, sales in units per salesman used, and similar indexes. They can be compared from day to day and over long periods without being affected by changes in costs or money values or prices.³

Other good correlations and performance measures are those in which one monetary value (dollar value of production or sales or cost of transportation, etc.) is related with the corresponding physical units involved. This gives indexes such as dollar value of production per man-hour or cost of transportation per pound transported, etc. As long as no changes in the values occurred, the indexes are comparable, but if changes occurred, the indexes need special interpretation to be convincing.

Correlations between two figures which are both in monetary values, although frequently used, are subject to changes in the physical equivalent of both figures and thus are not always best. Nevertheless, often this kind of correlation must be used, especially in the control of the enterprise in its totality. Sales expenses as percentage of net sales and net profit as percentage of net sales are common measures used in controls.

³ For additional information, on the application of controls see Chap. 13, How to Get Best Productivity, and Chap. 15, How to Get Best Sales, pp. 310 and 352.

4. *Frequency of Control:* In laying out each control it is important to decide if daily, weekly, monthly, or annual control should be obtained and provided for.

There is no doubt that, in compiling the data or figures which are used for control purposes, every day must be considered. But this does not mean that daily control is necessary or advisable. In fact, most people soon tire of being controlled daily. In actual work not all working conditions or all workdays are alike, and thus daily control is in some cases too frequent and too close to suit truly practical needs.

Weekly controls, established from weekly figure totals, or biweekly controls seem to be best where such data can be conveniently established. Where financial or dollar values are used, the monthly or quarterly preparation of statements may be best.

In the small plant, brief weekly reviews should be useful, but at least once a month the manager should review at the monthly meeting what the controls indicate so as to keep all concerned aware of where the company is heading.

HOW TO CONSTRUCT A SIMPLE CONTROL SHEET

At first thought it would appear difficult to design a simple control sheet suited to the small plant. Its activities are as multilateral as those of the large plant, only the figures show lesser volume. The control should be simple, direct, informative, convincing, and more economical than the more elaborate control systems so often described in books and articles.

Besides, there is such a variety of small plants that no one sample would serve all needs. Yet one can at least sketch out how a typical small plant control might be designed and what it might contain, leaving it to the efforts of any manager to choose and put into the control just what he thinks he needs. The stress, therefore, is on the know-how of doing it rather than on the details.

On pages 214-215 is a form which might provide for a simple daily, weekly, monthly, or annual control sheet. It may be used to gather all important facts (*over-all control*). Or special sheets may be provided for engineering, production, sales, finances, etc. (*main controls*). The same pattern, however, may also serve for controlling activities such as purchasing, transportation, services, or other special functions (*special controls*).

AN ACTUAL CASE OF A PHYSICAL CONTROL

The new production manager of one small wire and cable company started his control system by obtaining the physical capacities of all the various machines in use in his plant.

These physical capacities were tabulated by class and type of work and material for each machine. The tables so developed showed, in effect, the optimum production which could be attained and thus provided a fixed base against which to measure actual production. They also provided an aid to production planning.

By utilizing his knowledge of these ultimate physical capacities, he was able to spot low performance of groups or individuals, and bottlenecks created through imbalance of successive machines on a job. He was thus able to increase production by over 100 per cent with no increase in operating expenses.

He next developed a series of "break-even" points for each product, plotting unit delivered cost against lot quantity and then matching the sales price against these curves. This control helped not only in establishing prices for various quantities of each product but also in teaching salesmen which quantities were unprofitable and which were profitable for each product line.

IMPORTANT ACTIVITIES TO CONTROL

While each small plant manager only can be his own judge concerning the data needed for use in small plant control, there are thousands of small plant managers who may desire to have at least some indication of the conditions or activities which they should aim to control in order to analyze their plant conditions more carefully.

Especially in times of economic readjustment, increasing competition, declining prices, labor troubles, and high taxes, many may wish to make a complete review of their own doings so as to avoid being caught by surprise. Obviously no one can design a control that would fit all needs, all industries, all plant sizes, and all managerial tastes.

But in order to assist those willing to establish a somewhat more elaborate control system, at least a list of activities is offered, for which they may choose such data as they may find indicative and useful. No attempt is made to recommend all or any one of the activities as a definite part of the control system to be created.

For any combination of activities that may be chosen and combined into a control system, the data will be best established as follows:

1. Some on the basis of *daily or weekly figures* or as totals or averages of the daily or weekly data available, which constitute each *month*
2. Others on the basis of *year-to-date* figures or averages of the monthly data available, which in December become the whole year.

CONTROL SHEET

Small Plant Company

Date.....19.....

| Important Physical Unit Statistics Covering Various Activities | | | | | | | | |
|--|-----------|------------------------------------|-------------------------------------|--|------------|---|----------------------|------|
| Period | Man-Hours | Engineering | Production | Sales | Accounting | Purchasing | Transp. | Etc. |
| Today Yesterday This Week Last Week This Month Last Month | | The activities The physical | mentioned are units recorded | only tentative. should be chara cteristic of the | | Any other choice may be made activities. | to suit plant needs. | |
| Planned for Today This Week This Month | | | | | | | | |

| Corresponding Dollar Costs or Values | | | | | | | | |
|--|-----------|-------------|------------|-------|------------|------------|---------|------|
| Period | Man-Hours | Engineering | Production | Sales | Accounting | Purchasing | Transp. | Etc. |
| Today Yesterday This Week Last Week This Month Last Month | | | | | | | | |
| Planned for Today This Week This Month | | | | | | | | |

Indexes Resulting from Correlations

| Period | Man-Hours | Engineering | Production | Sales | Accounting | Purchasing | Transp. | Etc. |
|--|-----------|-------------|------------|-------|------------|------------|---------|------|
| Today Yesterday This Week Last Week This Month Last Month | | | | | | | | |
| Planned for Today This Week This Month | | | | | | | | |

Comments and Suggestions

| Period | Man-Hours | Engineering | Production | Sales | Accounting | Purchasing | Transp. | Etc. |
|--|-----------|-------------|------------|-------|------------|------------|---------|------|
| Today Yesterday This Week Last Week This Month Last Month | | | | | | | | |
| Planned for Today This Week This Month | | | | | | | | |

The following activities or conditions may be considered as worthy of control even in small plants:

Employment: Employment always has been important and will be even more so in the future. The daily number of employees of the plant, the total of people employed in the community, employee turnover in the plant, man-hours worked, absenteeism and man-hours lost thereby might be followed up in a systematic manner.

Total Net Sales: Daily, weekly, monthly, and year-to-date totals for the plant and, if available, also corresponding figures for competitors in the locality, area, county, or state should interest any manager. From these data sales ratios can be figured.

Product-line Sales: When control of individual product-line sales is deemed important enough, similar sales ratios may be established as are used for total net sales.

Production Efficiency: The number of units produced in total or in each product line and the man-hours spent on making each product group are excellent data to be used in determining production effectiveness or the effectiveness of other activities of interest to the manager. At least some statistical data on rejects, losses, waste, material inventories, transportation within the plant, etc., combined with value data will shed still more light on the efficiency of the work done in the plant.

Expenses for Various Special Functions: Expenses for sales, production, research, and engineering and for transportation into and out of the plant may well be worth controlling, and in this case they should be measured by the physical-unit data related to the expenses involved.

Net Profits or Net Income: These can be followed up directly from financial statements but should also be controlled by physical output data or by percentages of total net sales or line net sales data. Also they can be related to investment-capital data to show the percentage of return.

Capital Assets and Liabilities: They, too, can be controlled by careful study of the balance sheet or by relation to net sales, net profits, or physical units.

HOW TO UTILIZE CONTROLS IN THE SMALL PLANT

In the big plants, usually the comptroller prepares all data, the treasurer or cost accountant studies and analyzes them, and then the general man-

ager receives them in order to translate the findings into appropriate action by giving directions to the various executives.

In the small plant, hardly the same procedure can be followed, but even so, a routine for translating control findings into better action must be developed.

The personnel of the small plant, foremen, salespeople, or even partners, are usually not given to reading too complex statements, nor can they be impressed with figures or charts. As close as they are to their daily tasks, they know what they have done and what is to be done in the future.

What they need, however, and what they usually accept willingly as a result of applied control is a simply presented and understandable résumé of the amount and quality or perfection of the performance so far achieved and to be achieved in the future.

Probably the best way of conveying control findings to small plant personnel is to call a monthly or weekly meeting, where they are told the findings as well as the steps that each one should take to help himself in his work and through this the entire group.

Frank discussion and laying the cards on the table are even more necessary in the small plant than in the large one, where often enough no words are minced.

Much depends on the skill of the manager in *convincing* those whom he has with him that certain steps are necessary and should be taken. Men who are convinced will work harder, more cheerfully, and more successfully than men who are coerced or driven.

Whether a small plant manager uses control data as shown and mentioned so far or others; whether he uses basic figures, percentages, or ratios; whether he prepares charts or graphs, all such control is for naught unless the findings are interpreted intelligently to those who have created them.⁴

SUMMATION ON SUPERVISING AND CONTROLLING

Controls should be neutral instruments for measuring performances, not only of responsible individuals, but also of their groups.

In a small plant, where John is in charge of sales and Jim is in charge of production, *the groups which they are heading up are much more important for getting better performance than the "functional responsibility" which is delegated to either one of them.*

The main feature of any control, therefore, should be that it gives in-

⁴ For detailed texts on budgeting, controls, and ratios see Bibliography, section on Management.

formation which not only convinces the manager but also is useful enough to aid him in convincing his men.

Reliability of data, *clearness* of the findings, *understandability*, and *simplicity* of presentation weigh more and bring better results than fancy charts, colored pinheads, and long-winded explanations or argumentations.

Above all, however, any control and the information which it yields should be useful for better planning, better organizing, and better operating—and for *better supervising*.

Whether the control is prepared in physical units and/or in dollar values, in the form of simple management reports or in more elaborate control statements, its main value rests in its usefulness for transforming the prevailing management into better management and better performance. Controls should not leave a bitter taste but should provide the spark that kindles.

If such control is combined with honest and careful efforts in planning, organizing, and operating, a genuinely sound basis for good know-how management is created, be it in engineering, production, sales, financial matters, or the small plant as a whole.

Management of this kind will fulfill the principal object of management, which is, according to the American Society of Mechanical Engineers, "the art and science of preparing, organizing, and directing human effort applied to control the forces and utilize the materials of nature for the benefit of man." It also will help in the "development of every branch of the business to its highest state of excellence, so that the prosperity may be permanent."

PART THREE

*HOW TO SOLVE THE IMPORTANT PROBLEMS
OF SMALL PLANT MANAGEMENT*

*This part explains
how know-how
can be applied
in actual work*

"To point out that small business needs to raise the level of its management is not to be patronizing toward small business. Big business, for all its tremendous advantages in financial resources, physical equipment, and topflight know-how, recognizes and acts on the need of having its organization, policy, and operations continually tested from within and by outside counsel. The postwar small enterpriser cannot afford to be less realistic about his position. While his operations do not have the complexity of the highly departmentalized organization, the small owner-manager is required on a smaller scale to meet the same general problems as his large competitor. His personnel may consist entirely of himself. Even so, he must plan to co-ordinate the functions of buying, selling, financing, record keeping; he, too, needs continuous appraisal of his activities to see if they add up to a successful total operation."

A. D. H. KAPLAN

Small Business: Its Place and Problems, p. 105.

CHAPTER 9

HOW TO FULFILL THE LEGAL REQUIREMENTS

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LAWS AND THE SMALL PLANT MANAGER

Even before he starts or takes any action, the manager of any business or manufacturing enterprise is confronted with an intricate maze of laws, decisions, and rulings of varying dignity and weight. He must observe and fulfill them, whether he intends to operate as a one-man organization or as a gigantic holding company.

Familiarity with at least the most fundamental laws is a prerequisite for managing. Without such knowledge one cannot plan, organize, operate, or supervise in a businesslike manner. There are many laws which must be observed and legal authorities which must be considered if mistakes, oversights, and violations are to be avoided from the very beginning of all management.

By now, nearly all specific actions which occur in business or manufacturing are more or less covered by legal rulings, and there are so many that only a competent counsel can cope with them, with all their meanings and their fine points of application and interpretation. For this reason it is impossible to give a "brief" survey of all the aspects which should be observed in order to fulfill the legal requirements in small plant management.

Nevertheless, there is a minimum of knowledge of law which every small plant operator should have and apply in order to operate within the laws. Ignorance of laws or regulations is not recognized by the legal authorities as an excuse for not complying with them. Actions which violate the laws or regulations cause serious troubles and often result in penalties or forfeiture of benefits and privileges.

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To furnish at least a basic understanding and such fundamental knowledge as may be needed to meet the most common and practical legal requirements, the following is presented.

LEGAL AUTHORITIES

All laws stem from three principal sources and can be classified as

1. Constitutions, Federal and state, which are basic to all legal institutions
2. Legislatively passed laws (statutory laws, statutes)
3. Judge-made interpretations of these laws
4. Administrative-board rulings, intended to effectuate the statute laws as interpreted by the courts.

While a law is superior to all other considerations or intentions, it all too frequently leaves much to be desired as to clarity, since it seldom, if ever, discloses the original intent of the legislators. Nor can the texts of the laws cover all possible applications. Therefore, as experiences mount, the law courts are called upon to apply the statute and hence the judge-made additions to the statute.

Besides, the intricacies of our economy have proved so numerous that no judiciary is equipped to deal with the innumerable problems of administering the law, hence the need for boards of experts such as the National Labor Relations Board, the Federal Trade Commission, Securities and Exchange Commission, Public Utilities Commission, and many others.

Their rulings, if not inconsistent with statute as construed by the courts, are binding law and must be reckoned with in the operation of day-to-day practices. Since Federal, state, and municipal laws frequently affect the same operations and practices, caution must be exercised to comply with all.

As difficult as this may appear to be, there should be comfort in the fact that in everyday life and operating not all legal authorities and laws crowd each other, so that they can be considered as they have to be dealt with in starting a company and then in carrying out its various activities, such as production, sales and distribution, and labor relations.

CHOOSING THE LEGAL FORM OF THE ORGANIZATION

The initial consideration in the establishing of any business is the *legal form* in which it will be operated, and this must be decided, even though only one person is about to embark upon the venture. The general forms

in which a plant or business may be established are sole proprietorship; partnership, general or limited; and the corporate form. Each form presents certain legal problems which must be met at the outset and during the life of the operation.

The Corporation (Incorporated)

Many business operators find the corporate form of business the most attractive and advantageous. On legal grounds the advantages of this form of organization are the following: The corporation exists as a separate legal entity distinct from its true owners—the stockholders—and in its own capacity it may sue and be sued and own and dispose of property. Since it can be dissolved only according to the law which authorizes its formation, it offers the advantage of continuity of the business venture and is not subject to interruption by reason of the death of the owner and/or the sale of an owner's interest. The true owners—the stockholders—are *exempt from personal liability* except that under certain circumstances they may be liable up to the limit of their capital contribution.

In some states, the stockholders of certain types of corporations, such as a banking corporation, may be subject to a double liability in this regard if the business is not successful. The corporation also affords greater facility in the transfer of ownership through the transfer of the certificates of stock. It can raise capital more readily through the sale of stocks and bonds and attract investors on the basis of earnings and management.

Since the management of the corporation is vested in a board of directors, stockholders may invest in the corporation and participate in ownership, receiving income without having any responsibility for the management of the business, as they would in a partnership. As separate entities, corporations have credit possibilities which are separate and apart from the owners. All these characteristics have influenced the development of business in the corporate form.

Since a corporation is an artificial entity created by statute, a *state for incorporation* must be selected and its laws must be followed for the purpose of organization and the conduct of the affairs of the corporation. The place of incorporation need not necessarily be the place of principal business activity, since the major problem is the selection of a place where the laws will not be unduly restrictive, limit business opportunities, or levy a high tax burden. The corporation may *do business in states other than the state of incorporation* on compliance with the legal requirements (such as filing of certificate of doing business, designation for service of process, and payment of filing) imposed by the law of the states in which it is desired to do business.

The *charter or certificate of incorporation* as well as the *by-laws* must satisfy the requirements of the state law. Fees for filing the charter or certificate of incorporation may have to be paid. Even the name of the corporation may be regulated and subject to the requirements of the state departments responsible for the administration of the corporation laws. Agreements concerning the control and sale of the outstanding stock may be entered subject to legal regulations imposed on them by the state law.

The management of the corporation is vested in the board of directors selected by the stockholders. The directors occupy positions of trust and confidence and are responsible to the corporation for breach of their obligation to faithfully perform their duties as directors.

One further viewpoint must be considered in organizing a business as a corporation, and that is the *effect of Federal and state income and other taxes*. The tax advantages or disadvantages of conducting the affairs of the business in the corporate form will have an important bearing on the success of a particular business. They must be weighed with the other advantages of incorporation from the long-term viewpoint.

Partnership

The organizers of the business may agree to carry on the business in the form of a partnership. That is, they agree to *contribute their money, labor, and skill and to divide the profits and bear the losses in certain proportions*.

The contract of partnership presents numerous problems in the adjustment of the relationship between the parties. The capital contribution of each partner, the interest of each partner in the profits, and his share of the losses, and the terms of the partnership *must be agreed upon and stated in the contract*. In addition, provision must be made for disposition of the assets of the partnership after payment of obligations upon termination of the partnership pursuant to the terms of the contract, death, or withdrawal of partners. This phase of the agreement may present problems in fixing a method for valuation of the partnership assets upon termination and dissolution of the partnership. State laws usually contain provisions regulating all these matters and must be examined in connection with them. In addition, the law may require the filing in a public office of a certificate of partnership showing the names and addresses of the partners.

The partners are co-owners of the partnership assets and property with equal rights in the management and conduct of the partnership business, subject to the provisions of their contract. With respect to third persons, each partner is an agent of the partnership in the operation of the business, and his acts in this regard bind the partnership. Partners are generally liable, jointly and severally, for anything chargeable to the partnership.

Many states contain laws which permit the general partners to have *limited partners*. The limited partner is not bound by the obligations of the partners as the general partners are, and the limited partner is liable to the partnership only to the extent that he agrees to contribute to the partnership. Such contribution may be in cash or other property but not in services. The limited partner has no right to control the business, and if he participates actively in the business, he becomes liable to third persons as a general partner. Statutes which authorize the formation of a limited partnership contain detailed regulatory provisions concerning the filing of a certificate of limited partnership and the information to be set forth therein. These laws must be complied with in order to achieve a limited partnership.

Sole Proprietorship

The simplest form for a business operation is the sole proprietorship. In this form of business organization, the *owner of the business operates in his own name and he is responsible for all the obligations of the business*. The sole proprietor, however, may in many states operate under a trade or business name. Many states require that if a trade or business name is used for a business, a certificate showing the name of the true owner must be filed in a designated public office. Such certificates are then available for inspection by the public. Failure to file the certificate is, in some states, a crime.

Of all these forms the corporate form of organization appears to be the most advantageous for the small company.

LAWS TO BE CONSIDERED IN PRODUCTION

After the business is organized, whatever form may be used, quite a few legal aspects arise immediately in connection with matters of production. This is true whether the business involves the manufacture and sale of a new product or only repair or service. Obtaining adequate production in any event depends on such factors as obtaining factory space accessible for transportation purposes, machinery and equipment, and a labor force. Each of these elements involves some legal problem and in most instances a combination of practical and legal considerations.

Property Leases and Contracts

Securing factory space may mean the negotiation of a *lease* with the owner of the property or the negotiation of an assignment of the balance of the term of a lease with a tenant and the landlord. On the other hand, this

phase of the business may be the purchase of a factory building. In any event, the legal problems incidental to the successful launching of the business venture may require the examination or drawing of a lease or assignment thereof with the consent of the landlord to fit the requirements of the business, particularly from the point of view of whether the space may be used for the purposes of the business with the authority of local regulations, or the drawing or examination of a contract for the sale and purchase of real estate and a subsequent searching and closing of title to the property involved.

In addition, the space obtained by the business either by purchase or by lease may require substantial alteration work to make the space usable to the best advantage of the business. Appropriate provision for such work must be made, and a *contract for such alterations* negotiated and prepared. The work may include compliance with the building and fire-prevention requirements of the local community authorities, approval of plans for the job, and the issuance of appropriate certificates of approval by such authorities.

Acquisition of the necessary machinery and equipment may present additional problems. If the machinery and equipment are invested by one of the business organizers as a capital contribution, an appropriate agreement should be drawn and a question of valuation of such property may be included. Where the machinery and equipment are to be purchased from either the manufacturer or other sources, used or new, questions of the bill of sale, leases, licensing agreements, or contracts for the purchase of such property may also arise. Questions involving the *financing* of such arrangements may involve the negotiation and drawing of particular kinds of contracts, *chattel mortgages or contingent bills of sale*. Tied in with these transactions of buying personal property, such as machines and equipment, is the necessary search of the appropriate public records to ascertain whether there are any outstanding prior liens or encumbrances upon the property involved.

Just as soon as the business acquires property, whether a factory building or machinery and equipment, the question of insurance coverage arises and must be promptly attended to. Leases of space may impose upon the business, as tenant, the obligation to carry at its expense specified types of insurance. These provisions of the lease must be satisfied.

Labor and Employee Contracts

Having acquired the requisite space, machinery, and equipment for its purposes, the company must then obtain an adequate labor force. In doing this the plant must compete and comply in that market with respect to

wages, hours, and conditions of employment in order to attract a sufficient working force. Certain kinds of work requiring specialized types of skilled workers may find the labor supply in this regard entirely unionized, and the union may request that a *labor contract* covering this type of employee be executed even before any such help is sent to the plant. Whether or not such a contract can be executed before the workers have been employed presents a legal problem which depends on whether the Federal labor act or a state labor act, if there is one in effect where the business is located, is applicable and permits such a contract.

In any event, acquisition of the labor force involves *compliance with the state laws* as to workmen's compensation insurance and regulations covering wages, hours of work, safety, and other conditions. The requirements of state and Federal unemployment compensation and social security laws must be satisfied. The standards established by the Fair Labor Standards Act covering such matters as minimum wages, payment of overtime for overtime work, keeping of appropriate records of hours of work must also be met.

The management may also find it desirable or necessary to enter into *employment contracts* with certain specialized managerial employees and salesmen. In that event, it becomes necessary to prepare and draw the appropriate contracts. In this connection, it should be noted that such contracts may be required in the organizational phase of the business, particularly if the business is conducted in the corporate form where employment contracts with officers of the corporation may have to be prepared.

Depending on the nature of the business, additional business contracts may have to be drawn to ensure adequate and appropriate supply of raw materials and the distribution of the product.

Health Laws and Regulations

Pertaining to production as well as to products are quite a few *health laws and regulations* that must be observed, to which most states add certain regulations to safeguard public health, general welfare, and also the workers. Whether it is the maintenance of a nuisance, contamination of food, or pollution of water—the state has a definite interest.

The ancient rule of *caveat emptor*, "let the buyer beware," is now practically archaic. It is the manufacturer, jobber, distributor who must beware. The manufacturer must assume responsibility for his production as well as for his product, whether it is a food, drug, biological, or any other product.

The most important laws of this kind are the Food and Drug Act covering mainly products; the Industrial Hygiene Occupational Diseases Act,

which covers principally production; laws governing the processing, storing, and transportation of flammable goods; and municipal regulations covering prevention of nuisance, maintenance of industrial sanitation (sewage disposal), and prevention of trauma.

THE MANAGER AND THE LABOR LAWS

Personnel and labor-relations problems have become a part of the day-to-day management of every company that uses a working force. Even in the absence of unionization of the employees, it is fundamental that adequate personnel policies be established in the interest of efficient operations and that the pertinent laws be observed.

Some Legal Aspects of Hiring and General Relations

The techniques for hiring the labor force, use of appropriate *forms of application* for employment, interviewing the applicants for particular jobs, investigating their records, physical examination, and forming a conclusion as to whether they should be employed are but the inception of definite personnel policies.

The type of information that the application for employment may demand is determined mostly by its purpose and includes such matters as names and addresses of prior employers with periods of employment and reasons for termination. However, it is a violation of the labor act to request disclosure of union affiliation or activity in the application form or in the oral interview. Applicants for jobs cannot be denied employment because of union membership or activity, and employers who engage in such conduct are subject to the cease-and-desist orders of the Labor Board as well as possible liability for payment of back pay.

Some states have enacted *laws against discrimination* in employment on the basis of race, color, creed, or national origin, with a commission or state board to administer and enforce such laws. The information obtained from the applicant through either the written application form or the oral interview should conform to such statutes where they are in effect, and the pattern of hiring should not be such as to constitute a basis for a claim of violation.

Company policies with respect to employees and employee rules, if promulgated, should be sufficiently publicized so that employees have knowledge of them and are fairly chargeable with compliance. *Complaints and grievances* may arise because of what the employee thinks or feels about his job and his daily contact with his supervisors. These matters

should not be neglected, as such indifference tends to impair efficient operations as well as to result in legal unwelcome consequences. Many managements have recognized the importance of these factors and have voluntarily established procedures whereby complaints and grievances may be brought to the attention of management for mutually satisfactory adjustment. Managements have found such procedures a valuable method for keeping posted on employee thinking and needs, of substantial value in ascertaining the effect and results of company policies, and a means of avoiding legal entanglements.

There are few if any laws which regulate training programs, supervisors, and the relations between the management and its foremen beyond those of the general labor-relation laws. These subjects in the main are left to management's discretion. In fact, under the Federal laws supervisory foremen are not recognized as employees for purposes of collective bargaining.

How to Act in Case of Union Campaign

The employer-employee relationship becomes charged with considerable possibilities of disagreement and invasion of legal rights, however, when a union commences an organizational campaign for the purpose of inducing the employees to join as members and designate it as bargaining representative.

During such a campaign, the employer is not required to sit mutely by. He has the *right* to express his opinions, views, and arguments on unionization to his employees, provided such expression contains no threats of force or reprisal or promises of benefit if the employees refrain from unionization. The grant of wage increases or other employee benefits during that period may constitute such inducements and violate the labor act. However, the employer is not deprived of his normal right to select and discharge employees, provided such right is not exercised to discriminate against employees because of union membership or activity or otherwise to interfere with their right to self-organization.

The union engaged in an organizing campaign is under legal restraint not to coerce the employees in their right to refrain from union membership or activity. Threats of physical reprisal or economic revenge against specific employees because of their refusal to yield to union inducements subject the union to responsibility before the Labor Board.

Where a union demands that an employer recognize it as the bargaining representative of the employees, the employer has the right to insist that it prove that it has been designated as representative by a majority of the employees through an election conducted by the Labor Board.

The Legal Scope of Collective Bargaining

Once the majority status of the union is established or conceded, *the employer is obligated to bargain collectively* with and recognize the union as the sole and exclusive bargaining representative of the employees with respect to rates of pay, wages, hours of work, and other conditions of employment. The duty to bargain collectively requires that the employer meet with the union in an open mind, engage in negotiations with a sincere purpose and effort to reach an agreement, and, if agreement is reached, execute a signed contract upon request of the union. The union is also under a legal duty to satisfy these requirements of bargaining in good faith, and if it submits its demands on a take-it-or-leave-it basis, it fails to satisfy them.

The subject matter of *collective bargaining covers rates of pay, wages, hours of work, and other conditions of employment*. These terms have been construed to include such matters as merit increases, pension and retirement plans, and insurance plans. Collective bargaining as to these subjects is mandatory. The collective-bargaining process covers such further matters as union security provisions (provided the union's authority to enter into such an agreement is certified by the Labor Board after an election), wages, seniority, promotions, transfers, discharge, management's rights, no-strike-no-lockout clauses, grievance procedures, and arbitration provisions.

Once the *labor agreement* is negotiated, the problem of drawing the contract and administering continues. Adequate protection of the employer must be provided in the agreement so that the operation of the business and its consequent responsibilities may not be unduly impaired. Administration of the contract includes the day-to-day handling of employee, union and employer problems arising from the interpretation, construction, and application of the contract provisions to the practical functioning of its working, and will involve the handling of such problems as well as employee grievances through the various steps of the grievance machinery and, if not amicably adjusted thereby, through arbitration.

Manifestly, all levels of supervision, particularly those who have initial contact with these problems, must be thoroughly familiarized with requirements of the terms and provisions of the contract and schooled, in some measure, in management's policy and methods of handling such situations. Individual employment contracts give way to the collective-bargaining agreement, and the terms and conditions of employment embodied in the labor contract become part of the terms of hiring of the individual employee.

The Fair Labor Standards Act and Minimum Wages

Entwined in the employer-employee relationship are the obligations imposed on employers by the Fair Labor Standards Act mentioned before. This condition is complicated by the essential fact that its coverage is determined, not on the general nature of the employer's business, but on an individual employee basis. Incorrect applications not only disrupt employee relations but leave the employer subject to the penalties of the Act, including liability for double damages and counsel fees to employees who are underpaid. Good faith reliance on the interpretations of the law by the Wage-Hour Administrator now may constitute a defense to claims under the Act, according to a recent amendment.

The Fair Labor Standards Act *applies only under certain conditions*. If the employer ships his product outside the state of location of his plant, his production employees are covered by the Act. His nonproduction workers may also be covered when they perform functions necessary to the production of such goods. Employees who engage in the various processes contributing to the final product, including clerical employees, are covered.

Even an employer who sells his product within the state may be subject to the Act, however, if it is found that he intends or had reason to believe that the local buyer will ship his product out of the state. The nature of the business and the place he occupies in it are factors involved in such considerations. An employer who receives shipments from outside the state may find that his employees who handle such shipments are covered by the Act although the business viewed as a whole is not engaged in interstate commerce.

Such employees as clerical employees, stenographers, maintenance crews, watchmen, plant-cafeteria workers, and elevator operators, although not engaged in production of goods for commerce, may be covered by the Act if their work is "necessary" for such production. That does not mean that their work must be essential or indispensable for such production. They are covered by the Act if their work is needed for production or if such production would be hampered by the omission of their jobs.

There are *specific exemptions* of certain occupations stated in the Act from its coverage. Executive, administrative, and professional employees are also exempt. To fall within such exemption, the employee's functions must satisfy the definitions of the statute and the interpretation thereof established by the Wage-Hour Administration. In broad outline, the definitions of such exemptions demand the payment of a stated minimum

salary and the performance of executive or administrative duties requiring the exercise of independent judgment and discretion. In addition, the professional employee must meet the requirements as to specialized training and schooling to fall within the exemption.

There are also the "*self-executing*" exemptions, such as employees in a retail or service establishment; seamen, agricultural workers; drivers, helpers, mechanics, and loaders who are within the jurisdiction of the Interstate Commerce Commission; and certain employees in the seafood and fishing industries.

The Act fixes a minimum wage for both male and female employees of 75 cents per hour and requires payment of overtime at an overtime rate of $1\frac{1}{2}$ times the regular rate if pay for all hours worked is in excess of 40 hours per work week. Congress increased the minimum rate of pay in industries affected by the Fair Labor Standards Act in January, 1950.

Worktime, Overtime, and Legal Pay

The Fair Labor Standards Act requires that the employer be thoroughly familiar with *what constitutes compensable working time*. The recent amendments contained in the Portal-to-Portal Act establish the general rule that no payment is required to be made for an employee's activities before he commences or after he ends his production activities unless payment for such activity is required by reason of contract, custom, or practice. Thus, walking time, riding time, or traveling time to and from the actual place of job performance is not compensable unless compensation is required for the reasons aforementioned. The relationship between activity before and after the employee's "principal activity or activities" and what constitutes the latter remains open for administrative and court interpretation.

Once compensable working time is determined, computation of *overtime* must be made. Worktime in excess of 40 hours per work week must be paid at the rate of $1\frac{1}{2}$ times the regular rate of pay. The "regular rate" is the actual rate of pay, which cannot be less than 75 cents per hour (under newly established rates). Involved in determining the regular rate are such factors as bonuses, change of work week, change of wage rates in the work week, and incentive rates, and complicated formulae must be applied to maintain constant wages for fluctuating hours. Also involved in the computation of overtime is the treatment of wage deductions such as union dues and wage additions like supper money, board, or lodging.

Thus, overtime requires *payment of one and a half of the employee's "regular" rate of pay*. The Act does not define what constitutes the "regular" rate of pay, and therefore it is necessary to look to judicial decisions

to ascertain the meaning. When determining the regular rate of pay, all items of value that the employee receives as part of his normal weekly income must be included. The judicial decisions covering this subject deal with premium hourly rates, piecework earnings, bonuses, board and lodging, commissions, and fixed salaries for variable hours.

The regular rate of pay is the actual amount received by the employee for the work performed during the regular work week (excluding any payments received as an overtime premium) divided by the number of hours worked by such employee during that work week. Premiums paid for undesirable jobs or undesirable working hours or shift differentials must be included as regular pay for calculating the overtime rate. Premiums paid for Saturday, Sunday, or holiday must also be included unless such premium is paid for hours worked in excess of the fixed standards daily or weekly, in which event they may constitute true overtime and need not be included.

It should be noted that the Act takes the *week as its standard for computation of regular and overtime hours* and uses the hourly rate. Employees, nevertheless, may be hired for a fixed sum biweekly, semimonthly, and monthly. The overtime in such cases is arrived at by computing the yearly salary and dividing by 52 so that the weekly standard may be applied.

Constant-wage plans for employees working a variable number of hours have been worked out. If such a plan is to be valid, it must provide for a fixed regular rate of pay which is not less than the minimum required under the statute with time and a half for overtime, and it must guarantee not less than a stipulated weekly wage. The regular rate, however, must not be fictitious and must bear some relationship to the payments actually received by the employee.

Pay Records Must Be Kept

The Fair Labor Standards Act requires a regular and adequate *record-keeping system*. Such records should be preserved in case of a claim of non-payment by an employee. In such cases, the employee is not held to a specific standard of proof, and the burden is on the employer to show the work performed and full and proper payment. The administrator of the Act has issued *regulations for record keeping*, and they should be followed. The record may be inspected by the administrator's inspection division. In addition, the administrator has subpoena power to inspect records for the purpose of investigating possible violations. The administrator may obtain court enforcement of his subpoena without proof that the employer is actually subject to the Act.

Beware of Violating the Fair Labor Standards Act

Violation of the minimum and overtime provisions of the Act subjects an employer to criminal prosecution enforced by *fine and imprisonment, injunction proceedings, and employees' suits in which double the unpaid wages, costs, and attorneys' fees may be recovered*. The Portal-to-Portal Act has imposed a 2-year statute of limitations on employees' suits. The amendments also make provision for compromise of claims which arose prior to May 14, 1947. Furthermore, good faith reliance on rulings of the administrator constitutes a defense and may bar an action, even though subsequently modified or held erroneous by judicial decision.

Insurance, a Legal Requirement

The taking out of insurance is not left entirely to the decision of the manager. Acquisition of a plant, either by purchase or lease, and of machinery and equipment forces upon the business operator consideration of necessary insurance. Furthermore, the provisions of a lease of space for manufacturing purposes or a lease of machinery and equipment or the purchase of machinery and equipment on a conditional bill of sale may specify certain requirements as to insurance which must be complied with by the operators of the business.

The employment of a working force will, according to the laws of many states, require the *purchase of workmen's compensation* so that the employees are covered in the event that they suffer injury or death in the regular course of their occupations. Failure to comply with the insurance requirements of state workmen's compensation laws can result in the imposition of penalties upon the operators of the business as well as an absolute liability to respond in damages to the injured employee without regard to whether the accident was caused by negligence of the operators of the business or contributory negligence of the injured employee.

Insurance has been used as a means of protection in a great variety of circumstances. Many of these circumstances have become identified with particular kinds of insurance policies. However, it must be remembered that the insurance policy is a business contract and the nature and extent of protection it can afford depend on its terms and provisions rather than the particular title by which the policy is known or by the expressed purposes of the insurance company that issued it. The policy of insurance is the contract of insurance between the insured and the insurance company. Most states have enacted laws which regulate insurance companies doing business within their territorial jurisdiction, and some of these laws regulate

or provide for standard provisions which are deemed part of certain types of insurance. In addition, such state laws may establish principles for interpreting insurance contracts.

Some of the various types of insurance policies that will be of interest to the operators of business are the following:

Fire Insurance: In this type of policy the insurance company, in consideration of payment of the premium, agrees to indemnify the insured against loss or damage to property by fire. The policy may cover a building, the machinery and equipment, or other personal property as well as loss of business caused by the fire.

Some policies may be written as "open policies" so that the liability of the insurance company depends on the amount of the loss to be determined after the loss occurs. This term may also refer to a policy which states an aggregate amount, and the specific amounts are subject to be endorsed from time to time. However, some policies may fix the value of the property and the amount payable in the event of loss. These policies are often called "valued policies" and obligate the insurance company to pay the whole sum insured in the event of total loss. Where property keeps changing in quantity or location, it can be covered by "floating" policies.

Casualty Insurance: This type of insurance commonly includes the forms of insurance indemnity requiring payment for loss or damage to property, except in cases of fire or the elements. It is also applied to insurance against the effects of accidents resulting in injury to property and may also cover loss through accident or casualties resulting in bodily injury or death of individuals.

Liability Insurance: The policy generally covers the insured against loss caused by accidents in which a third person may be injured or killed if the insured were legally responsible for the result of such accident.

Burglary and Theft Insurance: Such insurance policies cover the insured against the loss of property by reason of the activities of burglars and thieves.

Credit Insurance: Some businesses carry such policies to insure against loss resulting from the insolvency of customers to whom they extend credit.

These are but a few of the types of insurance policies that are available. There are many others intended to cover the different situations that may arise in the course of business operations for the purpose of protecting

against the loss of property or possible legal liability to other persons. Some businesses insure the lives of valuable executives. In addition some businesses obtained *group insurance or hospitalization policies* to cover their employees. These forms of insurance benefits for employees have been instituted voluntarily and also as a result of collective bargaining, with the union representing the employees for such purposes.

In addition to these types of insurance in the case of employees, recent enactments in several states (including New York) have imposed upon businesses having a specified number of employees the necessity of obtaining *sickness and disability insurance* for employees. In New York State the disability compensable under the new law covers "sickness not arising out of and in the course of an employment." Employers are required to obtain appropriate insurance from a private insurance company or the state insurance fund to cover employees in respect to such disability.

Fulfillment of the legal aspects of insurance is not only a necessity, it also is a matter of prudent management, especially in the small plant, where disaster may spell ruin to the company or to the employees in case insurance was not provided.

THE LAWS TO BE OBSERVED IN DISTRIBUTION

Various techniques or methods used by the management to obtain and increase distribution of its product may lead to legal problems.

Advertisements

One of the most commonly used media in distribution—advertising—may result in legal difficulties. The use of the name, portrait, or picture of a *living person* in a commercial advertisement without the consent of such person is considered to be an invasion of his right of privacy, subjecting the advertiser to responsibility in damages in some states. On the other hand it has been held by the courts of other states that there is no common-law right of privacy. However, most states have enacted laws which make the unauthorized use of a name, portrait, or picture a misdemeanor and also provide for civil relief against such use.

Even where the portrait or picture of a person was inadvertently used without authorization in an advertisement, some courts have permitted recovery of damages against the advertiser. Thus it is of the utmost importance that appropriate authorization should be obtained before a person's name, portrait, or picture is used in advertising material. Likewise, even if the picture to be used was posed for publicity purposes and was received from publicity outlets, authorization should be obtained because a court

has ruled that receipt of publicity pictures from such sources was insufficient to relieve the advertiser from liability for the inadvertent use of the picture in an advertisement.

Trade-marks

Advertising also presents the important question of the use of a trade-mark. From the point of view of advertising, the *trade-mark is indicative of valuable good* will established on the basis of having actually sold its trade-marked product for 12 months. All sales efforts, however, and even the cost of advertising can be wasted unless the legal problems involved in the design and use of a trade-mark are thoroughly checked before application for the trade-mark is made, and even after the desired trade-mark is established care must be exercised so that its significance will not be destroyed by inattention and negligence. Protection of the trade-mark begins with its selection. Care must be exercised in the adoption of the words to be used so that the function of the trade-mark will be served and the possibilities of misuse reduced.

Appropriate searches must be made at the Patent Office for registered trade-marks to *avoid infringement claims by others*, because under the present law registration of the trade-mark constitutes constructive notice, and registration of the trade-mark finally selected must be properly handled. Actually the applicant must formulate and administer a trade-mark policy which can successfully be established only by adequate consideration and advice on the legal problems necessarily involved.

The Trade-Mark Act of 1946 provides for the registration of trade-marks which pertain to goods and of service marks which relate to services. Protected against unfair competition are *slogans, package, dress, or getup of a product*. The scope of the trade-marks is wider if it is fanciful or arbitrary than if it is a commonplace one in which it is limited to specific goods to which it is actually applied. The registration will not be denied to goods distinguished from the goods of others unless objectionable because of certain enumerated disabilities.

Tying Restrictions

"Tying restrictions" upon the sale of its products may involve a business in litigation and problems with the Federal Trade Commission on the ground of unfair trade practices in violation of the antitrust laws. A "tying restriction" is a *condition imposed by the seller that goods sold shall be used only with other goods of the seller, the purchaser agreeing not to deal in such other goods of competitors*. If the sales of the tied commodity are significant

or substantial, tying restrictions which prevent others from competing for such sales are illegal because competitors are thereby barred from a substantial market.

The absence of a direct provision against the use or sale of a competitor's product does not necessarily validate the arrangement if the practical effect is to preclude competitors from supplying the tied commodity. These principles are applicable to patented products, and even the pricing of patented and unpatented articles in combination has not led courts to countenance illegal tying restrictions. The Supreme Court has even refused to enforce patent rights themselves as long as the patent was being used to impose tying restrictions.

"Tie-in" Contracts

Related to the tying restriction is the contract whereby the purchaser agrees to buy all his requirements for a particular product from the same seller. Because such an arrangement necessarily implies that the purchaser will not buy that product from any other seller, *a question of validity arises*. Most of the cases involving the validity of such exclusive service agreements involved so far only sellers occupying a dominant national position in their field, and such agreements were ruled illegal where the sellers controlled from 40 to 90 per cent of their field. On the other hand, when the seller was one of 65 manufacturers who did only 1 per cent of the nation's business in that product, the buy-all contract was held not to violate the antitrust acts. Coupled with a tying restriction, the aforementioned *buy-all requirements contract*, particularly if a patented product is involved, is illegal if it has the effect of lessening competition. The problem is one of measuring, in standards indicated by the courts, the effect on competition caused by the removal of the amount of business by the seller.

Price Fixing

While *combinations of business to fix prices constitute illegal restraints of trade*, some state statutes authorize a contract whereby *an individual business may fix the resale price* of commodities sold to and by dealers. However, any sales-price contract must be drawn to comply with the requirements of the statute of each state, and appropriate notice must be given to other buyers in order to obtain the benefits of the statute and the remedying of injunction against those dealers who violate the fixed price. In addition, the seller must be properly advised, so that in subsequent transactions he does not render the price-fixing agreement unenforceable by reason of the

grant of greater benefits to other dealers. Such states authorizing price fixing of this nature do not validate price-fixing contracts between manufacturers or between wholesalers.

Discounts

The development of the business may create the desirability of granting price discounts or other buying advantages, particularly to quantity buyers, to certain customers and not to others. Immediately, there *must be considered the legal problem* of the effect of the Robinson-Patman Act, barring *price discrimination between different buyers* of the same grade and quality of the product. The legal problem involves the development of a valid plan of discounts on the basis of functional classification of the customers with adequate consideration of the competitive effect of the discounts from the point of view of court decisions on the subject.

The Robinson-Patman Act bars *promotional allowances or discounts* unless the buyer actually renders the services in return for the allowance, and proof of the rendition of such services should be required. Where no services are involved and the allowance is a trade discount, it is imperative that the same discount be made available to all of the manager's competing customers.

Likewise if *demonstrator's service* is made available to a customer, the same service must be made available to all competing customers in proportional terms. In any event, if a discount is to be allowed, the manager should make certain that the differential makes only due allowance for the cost in manufacture, sale, or delivery resulting from different methods or quantities.

Basing Point

In view of the recent Supreme Court decision banning the basing point, *management should avoid the delivered-price system*. Under this system the buyer of goods pays an allowance for freight which is either in excess of the actual cost of freight in delivery of the products to him (in which case he pays a "phantom freight") or less than the actual cost of delivery (under which he receives the benefit of freight absorption by the manager). This device has been held to be unlawful because it eliminates price competition.

Copyright

If in any advertising campaign published matter is used, it may not be reprinted or reproduced without permission of the copyright owner. Like-

wise, if the exact wording of a copyrighted publication, whether a book, paper, picture, or slogan, is used without authorization, the user may be charged with infringement. The law, however, does not bar the use of fair quotations with due acknowledgment of the source.

Subject of copyright may be *works of art, models or designs for works of art, reproductions of works of art, drawings or plastic models of a scientific or technical character, prints and pictorial illustrations, and labels.*

The laws must be checked for the statutory requirements of copyright as to both form and notice, the number of copies to be deposited in the copyright office, the rights secured and remedies for infringement, injunction, damages, and an accounting for profits.

Patents

The Patent Law gives to the patentee the right to exclude others from making, vending, or using the invention covered by the patent. In short, it is a grant by the Federal government of the use of the courts to enforce this right by suing for enforcement. Thus, a patent gives protection for jurisdiction as well as in the distribution of a product.

Whether or not such protection may be claimed can be determined by a test for patentability announced by the Supreme Court:

A new combination of old elements whereby a new and useful result is obtained in a more facile, economical, and efficient way is patentable, provided the discovery and reduction to practice of the novel combination required greater skill and higher thought than would be expected of an ordinary mechanic trained in the art.

If the manufacturer fears that a proposed product will infringe some patentee's patent, the former may inquire of the patentee concerning the question, and if the patentee in his answer claims an infringement the manufacturer may bring an action for declaratory judgment.

While a patent is pending, the article may be marked "patent pending." After the patent is granted, the article should be marked "Patented. Number. . . ."

The marking of an article "patent pending" in and of itself gives no rights, for even though a patent is eventually issued, there can be no recovery for acts of infringement committed prior to the issuance of the patent. As a practical matter, however, the marking of an article "patent pending" warns a potential infringer of the possibility of the issuance of a patent and thus discourages the investment of capital in the manufacture of the infringing article.

Postal Regulations

Because of the complexity of modern business and the extended market made available through modern means of transportation and communication, management *must avoid the misuse and abuse of the mails* through practices such as unlawful use of postage to make a false return, mailing obscene or libelous matter, conducting a lottery, promoting frauds. In many of these cases the fact that the management was innocent or unwittingly trapped into the commission of the crime is no defense.

The postal laws define what material may be transported and delivered through the United States mail. Mailable matter is divided into four classes:

First class: covers letters, postal cards, and all similar material.

Second class: covers all newspapers and other periodical publications.

Third class: covers such items as books, circulars, and printed matter except what is entered as second-class mail.

Fourth class: covers materials not included in the other classes and weighing over 8 ounces and not in excess of a stated poundage or larger than specified dimensions.

While the statutes applicable require that, in order to be entered as *second-class mail*, a publication "must be originated and published for the dissemination of information of a public character, or devoted to literature, the sciences, arts . . .," the Postmaster General has no power to prescribe for the literature or art which a mailable periodical, not obscene, disseminates or to determine whether the text of the periodical meets some standard of the public good. Thus, he cannot withdraw the second-class rate from a publication because it seems to him that contents of the publication which is not obscene is not good for the public.

Furthermore, the postal authorities cannot apply the postal rates in such a manner as to discriminate among competing businesses of the same kind. Mail service is regarded as a highway over which all business must travel *without discrimination in rates between competing businesses*. While no one can claim the right to use the mail for matters which the applicable laws properly declare to be nonmailable, the postal service cannot be extended to one class of persons and denied to members of the same class. A publisher of any company who has fully and fairly complied with the requirements for second-class mail has a right to have his material entered as second-class mail and to enjoy the rate for that class.

Where the post-office department *improperly charges a higher postage rate*, a suit may be maintained against the United States in the United States District Court to recover the excess.

Transportation

If goods are shipped, the sender must comply with the duties to the carrier and take such precaution as to protect his own rights in the transportation of the goods, because common carriers limit their liability through the bill of lading.

By exercising the right to *stoppage in transitu* the sender may prevent delivery to an insolvent or bankrupt customer and prevent resultant loss or damage.

The regulations of transportation are in the main within the authority of the Interstate Commerce Commission, which is paramount, subject to the restrictions imposed by the Administrative Procedure Act which became effective Sept. 11, 1946, Public Law 404, 79th Congress. As a result of this law the initial or recommended decision of the examiner or officer of the Interstate Commerce Commission in the absence of an appeal becomes the decision of the Commission. Interstate Commerce Commission rules vitally affect distribution through regulation of rates, length of haul per ton-mile, interpretation of tariff, and allowance to owners of property transported.

TAX LAWS

Income Tax Laws

Taxes on income are the taxes most often to be dealt with. Under most circumstances they constitute by far the greatest portion of the tax burden. The incidence of this tax depends to a great degree on the business form adopted on organization, and it is coupled with the taxing philosophy running through the statute which may be in force in any particular year.

For example, during the war years an excess-profits tax was imposed by the Federal government on corporations; now a statute is in force which favors corporations by imposing a maximum tax on corporate income of 38 per cent. *Under an "excess-profits-tax" regime the corporation suffers tremendously as against the partnership or individual proprietorship*, for corporate profits are taxed at so high a rate that little is left for dividends to the stockholders. This was evidenced by the fact that during the war years many small corporations were dissolved with their assets being transferred to the stockholders as partners in the successor enterprise.

On the other hand, *when, as now, the Federal income tax on corporate profits is limited to a maximum percentage, distinct tax advantages may flow from doing business as a corporation.*

Salaries paid to corporate officers, who in a small corporation are usually the stockholders, are deductible from the corporation's gross income to the

extent that such salaries are reasonable in amount. Therefore, where the corporation has not been too successful during any particular year, the deduction from gross income of these salaries will usually result in the corporation's having no net income, and no corporate income tax has to be paid. Under such circumstances the officer-stockholders will be in exactly the same position taxwise as though they had been doing business as a partnership; *i.e.*, they will be taxed individually on their salaries.

If, however, the corporation has been successful during any particular year, the stockholders may be in a much better tax position as stockholders than they would be as partners. As partners they would be taxed on their distributive share of earnings even though by reason of the requirements of a growing business or for other reasons no actual distribution was made. Taxed at individual rates it does not take too great an income to result in an over-all tax in excess of the corporate limit of 38 per cent. This is particularly so where the partners have income from other sources.

As stockholders of a successful corporation, however, to the extent that the corporation does not unreasonably accumulate surplus within the prescription of Section 102 of the Internal Revenue Code, they need not be taxed individually on the corporate income. All that needs be done is for the corporation to retain this income as surplus, and such income is then subject only to the maximum tax mentioned before. Such retention, of course, cannot be unreasonable in the light of the present and future needs of the business. However, in times such as these, when the future is uncertain, most businesses can show good reason for the accumulation of surplus.

In addition to the Federal government, most states impose a tax on the income of corporations organized under their laws or doing business within such states. Sometimes these state taxes are called "franchise taxes," but they are, nevertheless, taxes on business income.

These state income taxes are rather nominal when compared with the Federal tax, and consequently they are not an important factor in determining whether a business should or should not be organized as a corporation. However, the orderly administration of the affairs of a corporation requires a substantial familiarity with the provisions of the state corporate income-tax laws to which the corporation is subject.

In addition to the income tax the businessman must give consideration to the following taxes some or all of which are imposed by the various taxing authorities:

Survey of Other Tax Laws

Sales Tax: The sales tax is usually a state tax, but in some few instances it is imposed by a municipality. It is a tax on the sale to the ultimate consumer

of tangible personal property and is imposed on the purchaser, the seller, however, having the duty of collecting the tax. The sales tax may apply to interstate transactions where the taxpayer is doing business within the state, provided the tax does not discriminate against interstate commerce.

Use or Compensating Tax: This tax is complementary to the sales tax and is directed against the avoidance of the sales tax by purchasing outside the jurisdiction of the taxing authority. For example, if a New York City retailer were to purchase a cash register in New York City, he would clearly be subject to the sales tax. If, however, he made the purchase outside the city and then brought the cash register into his store in New York City, he would not be subject to the sales tax, which covers only sales made within the city. To get around this easy device for avoiding the sales tax which covers only sales made within the city a use or compensating tax is imposed, predicated not on the sale but on the privilege of bringing into and using in the city certain tangible personal property which, if purchased there, would be subject to the sales tax.

Gross-receipts Tax: This is a tax on the gross receipts of a business regardless of profit as distinguished from an income tax, which is a tax on the net income or profit of a business.

Property Tax: In addition to the tax on real property with which we are all familiar, many states and municipalities now impose a tax on personal property located within the jurisdiction of the taxing authority. Unlike the use or compensating tax, this is a periodically recurring tax and not a tax predicated on the purchase transaction.

Chain-store Tax: This tax is imposed by 18 states and is based on the number of stores operated by the business in the particular state.

Stock-transfer Tax: Seven states and the Federal government impose a tax on the transfer of corporate shares of stock.

Social Security Tax: This tax is paid to the Federal government by both the employer and employee on the first \$3,000 earned during the calendar year by the employee.

Unemployment Insurance Tax: This tax is borne by the employer and is based on its total payroll during the calendar year excluding payments in excess of \$3,000 to any one employee. It is important to note that an employer becomes subject to the tax as soon as he has employed during the

calendar year the required number of employees for the required number of days. As these requirements depend upon the law of the particular state, it is suggested that the state law be examined.

Retailer's Excise Taxes: The Federal government imposes a tax of 20 per cent of the retail selling price on the sales at retail of furs, jewelry, toilet preparations, and luggage.

Excise Taxes on Facilities: The Federal government also imposes an excise tax on the following services: domestic radio and cable dispatches, international radio and cable dispatches, safe-deposit boxes, long-distance telephone calls within the United States, international telephone calls, local telephone calls where the charge is less than 24 cents, transportation of persons, transportation of property, transportation of coal, pole-line transportation of ore.

In addition to the taxes discussed above there are many miscellaneous taxes, both Federal and local, which are sufficiently limited in their application as to make their mention here unwarranted.

LAWS AND SMALL PLANT FINANCING

Where small business is transacted in the corporate form, the need for securing a larger amount of capital than can be obtained through debt financing has resulted in the development of financing through sale and lease back.

Sale and lease-back financing involves a sale of land and buildings to an investor by the business concern, which simultaneously leases them back on a long-term agreement, frequently containing provision for renewal and repurchase. This plan of financing, which is legal, has been said to offer substantial tax advantages. Investors have regarded the arrangement as attractive, since it results in the increased ability of some business concerns to borrow. Other businesses regard the arrangement as having a desirable effect on their credit standing, because it replaces fixed with current assets in their balance sheet.

It also avoids the legal restrictions upon company financing imposed by the usual provisions on bond indentures, term loans, or preferred stock certificates and for the same reason leaves the company in a more advantageous position for future financing. The major tax advantage claimed for the sale and lease-back transaction is the assumption that the corporation may claim 100 per cent deduction of the rental payments. No court decisions on the tax question in the current sale and lease-back arrangements have as yet been published.

Inventory and account financing are among the more current methods of obtaining funds for small plants, regardless of whether they are corporations or any other forms. Inventory financing may be used by the manufacturer to enable the business to acquire the finished product for resale. Thus a loan may be obtained with the raw materials on hand, goods in work, or finished products as security. The legal form which the financing arrangement may take varies greatly and is influenced by the nature of the property involved as well as by the traditions of the lenders.

A basic concept involved, for instance, is that payments are made to the lender at designated times at which the borrower uses or disposes of the goods. In the case of raw materials the time designated may be the manufacturing operation. In the case of semifinished or finished goods the payment date is probably the sale of the goods by the borrower. As the inventory of such goods is decreased and proceeds of sales are received by the borrower, the contract usually requires that they be turned over to the lender, who applies them in reduction of the debt.

Since, customarily, the inventory collateral exceeds the amount of the loan, the loan will be paid before the entire inventory is disposed of. The kind of goods involved also affects the form of the contract. Durable goods having a high unit price may require a contract providing for a specific release price to be paid the lender to release each unit of inventory from the lien.

Financing through accounts receivable involves a pledge on sale of such accounts to the lender, usually a commercial factor, who takes the account at a discount and without recourse against the assignor in the event of default by the account debtor. Notice of the assignment is given to the account debtor, who makes payment to the factor. Another arrangement does not provide for notification to the account debtor, and the assignor makes collection on behalf of the assignee.

Quite a few legal aspects are involved even if the borrower of funds obtains them from the more conventional sources where he may try to obtain adequate loan and equity capital. Among these sources are commercial banks and trust companies, industrial banks, factors, insurance companies, commercial paper houses, equipment manufacturers, and other suppliers.

The techniques of financing from these sources vary widely, and so do the legal obligations which the borrower has to fulfill. These are, besides, the possibilities of financing through warehouse receipts, chattel mortgages, conditional sales, trust receipt liens, and quite a few other legally possible but somewhat involved procedures with rather serious obligations.

These enumerations should be sufficient to show how laws and management interlock, even where commonly the science of management does not stress the legal points.

SUMMATION

The foregoing comments on How to Fulfill the Legal Requirements are mere attempts to introduce the manager to legal aspects and to responsible thinking. There is no way to cover all aspects in one chapter.

But even if only awareness of the legal aspects of management has been created, the work of the small plant manager is bound to become not only more circumspect but also better.

It simply is not wise to do things first and find out later. Nor is it always wise not to act if in doubt.

Laws are made to protect and help as well as to prevent and punish.

The first step in fulfilling legal requirements ought to be to *take an interest in knowing or asking a competent legal counsel* what laws there are to be observed in any situation and what they stipulate. And then the second step should be *fulfilling* them.

CHAPTER 10

HOW TO GET BEST WORKERS AND LABOR RELATIONS

BY

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With regard to labor, small manufacturers have an inherent advantage over larger corporations. The big producers with their specialists, laboratories, high-production equipment, etc., have a material advantage over the small plants, but with increasing size there comes a dilution of the all-important personal relationship between the workman and the management. Here, then, is a competitive area in which the manager of a small plant can capitalize on the advantage of his small-sized operation. Proper attention to securing best suited workers and labor relations improves the competitive position of the small company out of all proportion to the time and money invested in properly handling the working force. With these thoughts in mind it is our purpose to suggest some of the policies and procedures which have proved effective in a number of small plants.

Before going any further with the discussion of the personnel problems to be solved, there are some fundamentals that ought to be considered first.

EMPLOYMENT IN THE SMALL PLANTS

Most statistics presented in preceding chapters showed data for 1939, which year is considered as a most significant one and is used in many economics and sociology studies. For information on prewar employment conditions the reader is referred to the tables in Chaps. 1 and 3.

However, statistics are now available which report on postwar conditions. Figures in the following table place the discussion of employment in small plants on a more recent basis.

¹ The author was director of labor relations of the Associated Industries of Cleveland, Ohio.

TABLE 1. SIZE DISTRIBUTION OF MANUFACTURING FIRMS AND EMPLOYMENT, MARCH 31, 1948 *

| Size class | Manufacturing firms | | Paid employees | |
|---------------------------|---------------------|----------|----------------|----------|
| | Number | Per cent | Number | Per cent |
| 0-3 employees | 146,600 | 44.5 | 130,000 | 0.8 |
| 4-7 employees | 52,100 | 15.8 | 274,000 | 1.7 |
| 8-19 employees | 56,800 | 17.3 | 703,000 | 4.4 |
| 20-49 employees | 37,900 | 11.5 | 1,159,000 | 7.3 |
| 50-99 employees | 16,800 | 5.1 | 1,148,000 | 7.2 |
| Total small plants | 310,200 | 94.2 | 3,414,000 | 21.4 |
| 100-499 employees | 15,300 | 4.6 | 3,142,000 | 19.8 |
| 500-999 employees | 2,000 | 0.6 | 1,371,000 | 8.6 |
| 1,000 or more | 1,800 | 0.6 | 7,912,000 | 50.0 |
| Total manufacturing | 329,300 | 100.0 | 15,839,000 | 100.0 |

* U.S. Department of Commerce, Business Structure Division, Office of Business Economics, *Survey of Current Business*. May, 1950, pp. 13, 19, 20.

NOTE: Details will not necessarily add to totals because of rounding.

These figures show that in 1948 there were in existence

310,200 small plants, employing less than 100 workers, and
3,414,000 employees working in these small plants.

If one also considers service shops doing technical work as small plants, the 1948 statistics reported in the same source would add

199,900 small service shops, employing less than 100 workers, and
267,000 employees working in these small shops.

These figures show clearly how important the small plants and small repair shops are in the total picture of manufacture and technical services. The data will suffice to put the whole small plant employment situation in its proper light, and to avoid consideration of labor-management practices and relations that are not applicable in the small plants.

How many of the small plants are now unionized cannot be ascertained, but it should be safe to surmise that not more than 100,000 small plants have unions and thus union problems. The other remaining plants have got along so far without unionization, and their labor problems are still being settled directly between managers and men.

Nevertheless, and whether they are unionized or not, all small plants are affected directly or indirectly by labor legislation, wage agreements between

unions and large or largest firms, local wage rates established by the larger companies, and similar important issues.

HOW TO OBTAIN BEST PERSONNEL FOR THE SMALL PLANT

In view of these conditions it should be obvious that personnel management in the small plant has a character different from that prevailing in large plants. Usually, there is no personnel director and still less likely a labor-management-relations expert. The owner or manager still does his own hiring, and the subsequent relations are between him and each employee.

The small plant personnel, owing to the small number of people involved, must become by necessity a group. Personnel management must, therefore, be aimed to form a group in which each member becomes integrated with all other members, not only by his specific contribution to the work to be done, but also by his attitudes and actions.

If people are hired without consideration for the necessity of group formation, cliques form which are always the beginnings for open splits into factions, favoritism, and worse developments.

Since few small plant managers are inclined to call in psychologists to analyze the prospective employees, and since in the majority of small plants the unions do not yet supply the workers, many small plant managers have developed simple, direct, and often quite effective policies for hiring their employees.

Recruiting from the Neighborhood: This is the most obvious and most often applied hiring policy of small plants. The people coming from near by consider the plant as part of their environment. They have many experiences and interests in common; often they favor the same local sports, teams, politicians, or at least they have heard of the same people. They work more easily together, understand each other and the manager, and cooperate more readily if properly guided. They form a "natural, voluntary group," the most desirable small plant group to have. Into such groups also newcomers, who have settled in the same neighborhood, are quite readily assimilated, which sometimes offers to the plant manager the opportunity to hire especially good men who otherwise would drift into the larger plants.

Rarely do small plants which are known for "good employment conditions" have to advertise for workers. Those working there always find someone whom they "recommend," and if the plant owner or manager applies the proper judgment, he can consider the recommendations and still keep the undesirables out. It is his responsibility to decide if the new employee is

capable of doing the work and will fit in with the group at the same time.

Small plant groups recruited in this manner are by no means inferior to those hired on the basis of fancy tests or rating schemes so much played up as methods of hiring. In fact, small plant employees are generally more natural, happier, and much less sophisticated than those bright young men, office politicians, beautiful ladies, and touchy shop crews found in large plants. Whether they do clerical work or shopwork, they know they are "working people" like the boss, and all are rather proud of it. The good old-fashioned pride in being a worker is by no means entirely extinct and should be encouraged.

Age Distribution in the Small Plant: Small plant managers rarely are burdened with the concepts that men over forty are unfit to work, that ambition indicates "executive caliber," and that bossing others is the main requirement to be sought in a foreman.

The tolerance that can be found in small plants as to age and physical handicaps and the willingness to "give a break" to the old as well as to the young are in gratifying contrast to the cold, abstract reasoning so often found in the larger plants.

Good small plant management, however, does avoid too great uniformity in the age distribution and always aims to create an intelligent group composite of older, middle-aged, young, and youngest people, so that petrification is avoided. The main object is that all cooperate to do the daily work and aim to help each other.

Employment of young people can be found often enough, but it is hardly done to exploit them. It is caused by the kind of work which they are asked to do. Girl and women workers are not hired because they draw lower wages but because they do certain kinds of work more aptly or patiently than men or boys.

The Kind of Work to Be Done Should Determine the Worker: As many and varied as the scientific opinions may be on how to select a worker or clerk, in the small plant the know-how rules are few and simple. There is a definite kind of work to be done, and the one who can do it best is the one to be given the job.

Many small plant managers who hoped that "willingness to work" would be enough soon found that in their performance not all applicants live up to their promises. Few employees have the ability to "create their own jobs" in the large firms, and still fewer can do this in the small plant.

It is a duty of the manager to create the jobs and to determine the details that are required to do the work that has been planned; then he must find

the man or woman, boy or girl to do it. The more clearly the manager knows what each job needs in terms of qualifications, the better he will form his group and avoid the necessity for corrective measures. This same policy should be upheld by foremen where they act for or advise the manager on hiring. A foreman who has to rely on the workers to work out their own routines is not a good foreman, and looseness of operating is bound to result.

Job descriptions, job analyses, and job ratings have definitely a place in the small plant and are methods that save in wastes and troubles more than they may cost. They also fortify and strengthen the small plant manager in current or prospective dealings with unions.

The fact that a small plant may have "only a small number of workers" is no excuse for not clearly planning each job and job routine to be organized and seen through as would be best technically as well as managementwise. If each job is thus established carefully and then described, analyzed, and rated, then for each job a satisfactory basic wage rate can be established. Each job rate can be related to all other job rates, and thus a sound basis for a wage structure will be created. Troublesome argumentation can thus be avoided or settled on the basis of facts.

A small group rather than a large one is open to reason based on facts, and that should be considered in reference to every job and every employee in the plant.

Women Workers: Experience has shown that women are perfectly competent to perform work that was always considered a "man's job." In those instances where speed and manipulative dexterity are at a premium, women work out particularly well. They also appear to have better resistance to monotony in routine, repetitive operations than have men. In the opinion of many foremen women pose more personnel problems than men, and there is evidence to show that they are not so steady on the job as men. It may be observed that this is due to two outstanding factors in addition to physical considerations: Many women do not have the same home responsibilities for the support of dependents as men, and contrariwise, they sometimes have such home burdens that these family duties interfere with their attendance at work. Experience has shown that women with industrial experience and family obligations, but without too many duties in caring for a home, make excellent employees.

Toilet, locker-room, and rest-room facilities for women in small plants are often lacking, and since the duplication of such facilities for men and women is expensive, the lack often constitutes a bar to the employment of women. When women are working on the same job as men, legal requirements often make it necessary to adjust the working speeds of men to

women or to adjust female rates of pay to a lower level than that of men doing similar but more work. Since the policy of similar pay for similar work by men and women was established, some complications may arise over this issue.

Hiring Only Experienced Workmen: Many small plant managers seem to believe that only those should be hired who already possess the qualifications to meet the requirements of the job as established through the job-description procedure. The outstanding advantage in hiring only experienced personnel is that it does away with the necessity for training new employees and for making several promotional changes in order to fill one job. However, workmen rarely fail on the job to perform the tasks assigned them owing to a real lack of experience, especially when a reasonably thorough job of screening and at least some teaching are done by the person doing the hiring and by the foreman. Against hiring only experienced men are the higher wages which have to be paid and the frequent unwillingness of such workers to do, in a different manner, a certain kind of work which they claim to know.

Training: Many small companies prefer, therefore, to establish an on-the-job training program to train inexperienced employees. The advantages of this approach are numerous. Young blood is being constantly fed into an organization in contrast to the policy of hiring only experienced employees, which obviously will steadily increase the age level of the working force. By establishing lines of promotion and giving young employees training and increasingly more difficult work as they are able to do it, the small plant can keep its ranks from getting stale and its operating can gradually be improved.

Promotions should be the reward for meritorious performance at the lower level. Unions have shown a distinct tendency to insist that upgrading be made upon the basis of seniority, with some consideration being shown for merit and ability to perform the work. The basis for this attitude allegedly stems from charges of favoritism being shown by management, and there is some truth in the contention. By matching the employee's qualifications against the requirements of the job, it is possible to determine his deficiencies in a systematic manner and to give appropriate training to correct these deficiencies.

The same procedure applies in preparing the employee for advancement to the next higher job classification. He should be prepared in advance to perform the work when the opportunity offers. This does much to overcome the difficulties of promoting strictly in accordance with seniority, since training of this kind brings into clear relief the qualifications of the

employee in comparison with the requirements of the job while he is being given an opportunity to train for advancement. Unqualified men are weeded out at this stage, loss of face on their part is avoided, and the union and the management are given a chance to agree in advance as to who will be promoted rather than making a decision under the pressure of having to fill a vacancy immediately without adequate time to consider the matter thoroughly.

Seasonal Employment: In many small plants there is a distinct seasonal increase or decline in activities, due to the nature of their products or line of work. In other small plants such increases or declines arise because their main customers either call on them for special help during certain months or curtail their orders during other months.

These changes in production loads can be partly corrected through better management planning, but often they cannot be helped because the small plant has to conform to its orders and may need the money which this irregular business brings.

Thus seasonal employment is created in quite a few small firms, and it is for the manager to handle these conditions fairly and squarely. Often employees are hired for work that is known to be only short-lived or seasonal, but they are not informed about this for fear that they would not accept the jobs, stretch the work, or ask for higher pay. They simply are laid off without notice when the rush is over.

Such a procedure is hardly conducive to good labor relations, and once it is repeated, the reputation of the plant as an employer is bound to be impaired. Seasonal employment should always be made known as such, and surprise actions should be avoided. There are always people willing to do temporary work, but no one should be made to believe that he has a permanent job when he has not.

Racial or Other Discrimination: As regrettable as it is, discrimination exists. Regardless of laws and social enlightenment, quite a few employers have definite preferences as to the kind of employee they want in their plants and as to whom they do not want. Since there is no law which could compel any private employer to hire whom he does not want, he keeps the undesired ones out—and thus discriminates.

Just as there has been some irrational discrimination against the employment of women in industry in the past, there has also been considerable irrational discrimination because of race and religion. Experience indicates that discrimination made on this score is unjustifiable. The employment of considerable numbers of like people as well as the hiring of people regardless of nationality, race, creed, or color is likely to result in the

formation of cliques. It is therefore advisable to have the working force either as completely homogeneous as possible or as completely heterogeneous as possible. If members of minority groups are employed in small numbers, it is preferable to make sure that they are scattered throughout the organization and assimilated without regard for their race, creed, color, or nationality. It is an error to hire Negroes, for example, as common laborers only. They should be placed in skilled as well as unskilled jobs; they should be selected with the same expectation of upgrading as any other employee. In instances where this has been done, the results have been far more satisfactory than might have been expected.

The small manufacturer may well give serious consideration to another type of discrimination which has become of more importance during recent years. Many large corporations have provision for compulsory retirement at the age of sixty or sixty-five years. Two factors affect this policy. The first is that these men are supposed to be no longer capable of maintaining the high pace required of them, and the second is that many of the plants are unionized with attendant pressure being brought to prevent cutting the wages of these men in accordance with their productivity. Since they are no longer able to maintain the pace that justifies the payment of their high rate, they are separated from their employment. The experience of these men should not be lost, nor should their productive ability be lost; they are far from ready for the scrap heap. For example, in a recent study of the wage structure in a plant, a consultant noted a screw-machine setup man earning a rate considerably below that of the operators. Investigation disclosed that only one setup man was required and that the work was well within the physical capacities of a setup man retired from one of the finest companies in the city. The man and the company were both perfectly satisfied with the financial arrangement that had been worked out, and there was, in fact, no inequity in the rate due to the limited amount of work required.

Physically handicapped applicants should not be overlooked in considering sources of labor. A study of the job description will often show that the general screening is much more stringent than necessary with regard to physical requirements. The key to the problem is that a worker is not handicapped, in spite of any physical deficiencies he may have, if he possesses the necessary physical ability to fulfill the requirements of the job. These handicapped workers have proved that their attendance is better, the quality of their work is better, and the quantity of work produced is greater than the average nonhandicapped worker performing the same kind of work.

These comments should show that the recruiting of the right kind of work group for the small plant is not exactly a difficult task of the manager. It needs, however, care and the definite intention to form the human element

into a smoothly functioning team and to fit each employee into a job, well considered in all its details.

Then comes the much more difficult task of keeping the men working not only at their jobs but also with the management, so that mutually satisfactory management-labor relationships are established and maintained.

SOME OLDER METHODS OF GETTING WORKERS' GOOD WILL AND GOOD RELATIONS

Small plant managements perhaps more so than large plant managements have over the decades developed quite a number of techniques, the main purpose of which is to get workers to turn out the work desired of them and still remain contented with their jobs.

These two points are the main and possibly most basic objectives of any systematic efforts at good labor relations. They are being made especially in those plants where no union is established and where it is the aim of the management to keep on friendly terms with those whom they employ.

If friendliness and mutual understanding are aimed at and can be pursued, naturally there can be little stress applied to make discipline and obedience outstanding features of the relationship. Nor is harmony achieved by playing up anyone's authority or superiority of command.

These practical, time-tested techniques stress mostly the advisory, teaching function of those who have to show the others how to do the work and how to ask them to do a certain amount of it.

In all these techniques little is said about relations. This is all for the good, in so far as talking about good relations does not really create them. Therefore, the less said the better. But there are certain deeds which are brought into action and that seem to be much more effective than any psychological campaign or legalistic argumentation. These deeds are practical, understandable, and tangible expressions of good will on the part of management. And in general they are responded to by the workers.

Payment of Higher than Union Wages: In order to prove to the workers that their work is appreciated, many small plant managements voluntarily pay the same wage rates as are established locally by the unions plus 10 per cent. Of course, this makes such plants good places in which to work, good workers are attracted, and since such managements carefully observe all other possible requirements as to insurance, hospitalization, vacations with pay, working hours, working conditions, fair treatment, and quick response to requests or complaints, very few disagreements or arguments can arise between such managements and the men. Even the unions do not interfere, because they are not asked by the workers to do so.

Granting of Indirect Wages or Benefits to the Workers: Those management which cannot afford or do not desire to pay higher than union wages usually pay the same wage rates asked by the union, but if they desire to have especially good management-employee relations, they offer in addition special inducements or benefits to show their appreciation to their men. As such are offered training, hospitalization, family hospitalization, medical help, dental care, special bonus for length of service, seniority consideration whenever justified, recreational or sports activities, and quite a variety of other measures, all paid for by the company.

The workers and the unions consider these benefits as indirect wage payments which, in general, they accept, but often enough they suspect indirect payments and make it known that they would rather receive higher wages.

*Various Forms of Wage-incentive Plans:*² Where management and the workers desire to improve their relations mainly on the basis of wages, higher wages, and special wages as reward for special or better work, a variety of incentive-wage plans are applied.

For the purpose of this discussion, the term "incentive" is used to mean payments made in accordance with some plan to vary the amount paid in accordance with the productivity of the employee.

In those situations where the worker has little or no opportunity to vary his productivity owing to the nature of the work or where it is impossible to measure his productivity with any degree of accuracy, *straight day rate* is the best method of wage payment. In some jobs it acts as an incentive. Ease of administration and general acceptance of day rate make it attractive to many employers, although one may question if it is in accordance with the American philosophy of competition, which would indicate the desirability of rewarding the better producers with higher wages.

A mild form of incentive is the establishment of a "*rate range*" for jobs which are paid on a day-rate basis. This provides an opportunity for rewarding the more reliable and more efficient employee for his efforts and at the same time acts as a mild sort of punishment for the worker whose performance leaves something to be desired. When rate ranges are established, it is customary to use ranges amounting to somewhere between 10 and 20 per cent, depending upon the circumstances. For example, if the evaluated rate for a job were \$1 per hour, the range for the job might well vary from \$0.95 to \$1.05 or perhaps as much as from \$0.90 to \$1.10 per hour.

The use of *merit ranges* creates some immediate problems. The system

² See also J. Keith Loudon, *Incentive Wages*. New York, John Wiley & Sons, Inc., 1947.

is open to abuse through the supervisor's use of it to favor his friends and discriminate against those whom he does not like. It may require some procedure for having a second party verify the soundness of the supervisor's recommendations with reference to merit increases or establishing of a "merit-rating" program to determine who are the better producers.

Merit ranges often allow union representatives to bring pressure on supervisors for wage increases which result in the elimination of the merit range simply because everyone in a short time receives the highest rate, regardless of his ability. In spite of these difficulties, the obvious advantages of merit rating clearly outweigh the disadvantages pointed out.

Those who have the managerial ability to overcome the obstacles mentioned will enjoy a competitive advantage over those who cannot overcome them. A properly administered merit-rating program will act as an incentive and will produce higher efficiency in the working force.

In those instances where the employee can exercise considerable control over his output and where his production is readily subject to measurement, a stronger incentive is highly desirable. There are a great many different *formulae for such individual incentives*, each with its own particular advantages and disadvantages. But there are certain fundamentals which underlie all of these formulae. Essentially they are based upon the number of acceptable units or pieces an employee is able to produce in a given time. Call it piecework, measured daywork, standard hours, bonus; call it time saved; call it what you will, the underlying principle is the same.

The simplest way to understand these formulae is to plot them graphically on rectangular coordinates. The curves show the relationship between the reward and amount produced. It follows that the steeper the slope of the curve the greater the incentive to produce. When the curve has no slope, it has the characteristics of straight daywork. Incentive systems are not panaceas for poor supervision. On the contrary, they require the finest kind of planning, methods, material control, tooling, etc. It is dangerous to attempt to use incentives where present performance is poor. It is true that an incentive program, even though poorly conceived and executed, will often immediately increase production, but here is what often happens: When employees who have been loafing along far below their productive capacity see an opportunity to increase their earnings through increasing their production, they will naturally do so. But even the increased production may be nowhere near what they could produce if they were so inclined. Realizing that, if they produce to the best of their ability, their rates of pay would be so high that the employer would certainly increase the standard or "cut the rate," the employees limit their production to a particular rate.

Here we have a new situation in which the employer now concurs with

the employee that *production is above "standard" or above "normal"* and supervision is no longer in position to urge greater production even though the improved production is, in fact, far below what it should be.

Or let us suppose that the employer finds himself with a terrific *unbalance between the rates* being paid his salaried employees in comparison with his hourly paid employees.

To argue that the customer was willing to foot the bill under the old low-production day-rate conditions and will now foot the bill for exorbitant piece rates is foolish. The customer will do so in a seller's market, but when that situation changes, some of those who allowed their piece-rate standards to get away from them will go broke quickly. *For these reasons, piece-rate plans should be introduced with great care.* If experts are not available within the company, employers will do well to consider securing expert advice from outside before embarking on a piece-rate program of wage payment.

SOME MORE RECENT METHODS OF GETTING WORKERS' GOOD WILL AND GOOD RELATIONS

In addition to these older methods of getting good management-labor relations, quite a few additional ones have recently been developed. Some have been adopted also in small plants and might be of interest to others.

Reasons for Factual Considerations of Jobs

When a man applies at the employment office, he is principally interested in what will be expected of him and how much he will be paid for the performance of his duties. From there he goes on to considerations of the permanency of his work, the opportunities for advancement, working conditions, etc. In relatively few instances does he go into detail concerning welfare programs, paid holidays, vacations, and the many other labor-expense items which are frequently piled on top of the wage structure (on the average, amounting to about 15 per cent of the total payroll cost).

Interestingly enough, the employer is often less inclined to *talk about the precise nature of the work being offered* than he is to talk about the so-called advantages of working for his particular company. Perhaps one of the reasons for this is that he wishes to retain as much flexibility as possible in exercising his right to assign work and establish requirements of performance. He has learned from rather bitter experience that, once he has definitely stated the duties the employee is to perform, the *employee resists any change or addition to this assignment.* This natural and normal

resistance to change often results in the employee's feeling aggrieved if his job is changed after he has started to work. He then wants to reconsider whether or not he wishes to continue in the employ of the company under the changed conditions. If a *union contract* is involved with provisions relating to transfers, promotions, upgrading, etc., the problem is further complicated. The employee may not wish to terminate his employment with the company and at the same time may not wish to accept any modification in his work assignment. As a result of these considerations, management is frequently loath to state precisely what duties the employee will be expected to perform.

This is a mistake which will, perhaps, postpone meeting the problem, but it certainly will not solve it—instead it complicates the whole relationship.

Job Analysis

Job analysis, the systematic study of the activities in which an employee must engage to perform a job and the conditions under which these activities take place, is the *keystone of labor-relations technique*. A sharp line of demarcation may be drawn between this technique and the related engineering techniques of motion and time study, methods engineering, etc. Whereas these techniques have to do with the best methods of performing the work and determining the amount and quality of work that should be produced, job analysis has little immediate concern with these objectives. It is true that the endeavors of job analysis and motion study are very closely allied and must be integrated by the management in such a way as to reach the ultimate goal of management, namely, the efficient production of goods to fulfill the needs of the customer while creating the best possible working conditions and paying the highest wages that are economically feasible while producing a fair return to investors.

Factors and Point Values Possibly to Be Used in Analyzing, Describing, and Evaluating Jobs

It is apparent that job analysis should be undertaken after jobs have become fairly well established as the result of work simplification, motion study, etc. In order not to be misunderstood in this connection, may it again be pointed out that it is fully realized how dynamic working conditions must necessarily be. Furthermore, it is not meant that any of this work must be formalized to such a high degree that results will not justify costs. In those companies where the methods and motion-study programs are relatively undeveloped, no extensive work should be done on formal job analysis.

TABLE 2. JOB-ANALYSIS KEY *

Elements of Skill and Effort

| <i>Element</i> | <i>Degree</i> | <i>Point rating</i> | <i>Element</i> | <i>Degree</i> | <i>Point rating</i> |
|----------------|-----------------------|---------------------|-------------------|----------------------|---------------------|
| 1. Blueprints | Very complicated.... | 10 | 4. Accuracy | Very accurate..... | 20 |
| | Complicated..... | 8 | | Accurate..... | 15 |
| | Fairly complicated... | 7 | | Fairly accurate... | 7 |
| | Simple..... | 2 | | Ordinary..... | 2 |
| | Not required..... | 0 | | Rough..... | 0 |
| 2. Setups | Very complicated.... | 10 | 5. Responsibility | Very responsible... | 20 |
| | Complicated..... | 6 | | Responsible..... | 10 |
| | Fairly complicated... | 3 | | Fairly responsible.. | 5 |
| | Simple..... | 1 | | Ordinary..... | 3 |
| | Not required..... | 0 | | Simple..... | 1 |
| 3. Difficulty | Very difficult..... | 5 | 6. Variation | Very variable..... | 10 |
| | Difficult..... | 4 | | Variable..... | 8 |
| | Fairly difficult..... | 3 | | Fairly variable.... | 6 |
| | Simple..... | 1 | | Repetitive..... | 2 |
| | None..... | 0 | | Highly repetitive.. | 1 |

Elements of Working Conditions

| <i>Element</i> | <i>Degree</i> | <i>Point rating</i> | <i>Element</i> | <i>Degree</i> | <i>Point rating</i> |
|--------------------|---------------------------------|---------------------|-----------------|------------------------------------|---------------------|
| 1. Accident hazard | Extremely hazardous.. | 10 | 6. Acids | All..... | 4 |
| | Fairly hazardous..... | 4 | | | |
| | Normally hazardous.. | 0 | 7. Dirt or dust | Very dusty..... | 5 |
| 2. Fatigue | Very fatiguing..... | 5 | | Dusty or dirty.... | 2 |
| | Standing..... | 4 | | Normal conditions.. | 0 |
| | Walking..... | 3 | 8. Weight | Hand-operated jib-crane lift..... | 8 |
| | Sitting..... | 1 | | Power-operated jib-crane lift..... | 7 |
| 3. Eyestrain | Extremely strenuous.. | 7 | | Shop-crane lift.... | 6 |
| | Fairly strenuous..... | 3 | | Average hand lift.. | 3 |
| | Normally strenuous.. | 0 | | Light hand lift.... | 1 |
| 4. Heat | Extremely hot..... | 3 | 9. Fumes | Dangerous fumes.. | 2 |
| | Fairly hot..... | 1 | | Obnoxious fumes... | 1 |
| | Normal..... | 0 | 10. Wet | Heavy liquids..... | 5 |
| 5. Cold | Outside without protection..... | 3 | | Oily liquids..... | 2 |
| | Outside under cover.. | 2 | | Plain liquids..... | 1 |

* From *Factory Management and Maintenance*, Plant Orientation Library, Vol. 27, No. 10, October, 1939.

Job Descriptions

In situations which are characteristic of smaller companies whose volume of production will not justify the elaborate programs to be seen in large organizations, a "ready-made" job description from the *United States Dictionary of Occupational Titles* (available from the Superintendent of Documents, Washington, D.C.) may serve as a starting point or pattern to be followed. It contains the description of thousands of jobs commonly found in American industry. With few exceptions, these descriptions are excellently done. Just as a ready-made suit will not fit like a tailored suit, these descriptions will not fit the jobs in a particular plant in the way that tailor-made descriptions, "made to measure," would fit the situation. True, one may have to make a few alterations, but it is a major premise of labor relations that the best job analysis must be used that can be secured with available talent and money.

With these descriptions at hand an investigation of the plant situation can be started to see how nearly the task or tasks being performed in the plant come to fitting the description of the job as given in the *Dictionary*. It should be borne in mind that a job may consist of one or more tasks and that what is called a "job" in one plant may be only a single one of several "tasks" composing a "job" in another plant. Therefore in using the *Dictionary*, one may have to combine several "jobs" as given in the *Dictionary* into a single "job" in a particular plant. By modifying and combining descriptions given in the *Dictionary* and making one's own observations it should be possible to do a respectable piece of work in analyzing and describing any job as it exists in the plant.

*Job Evaluation*³

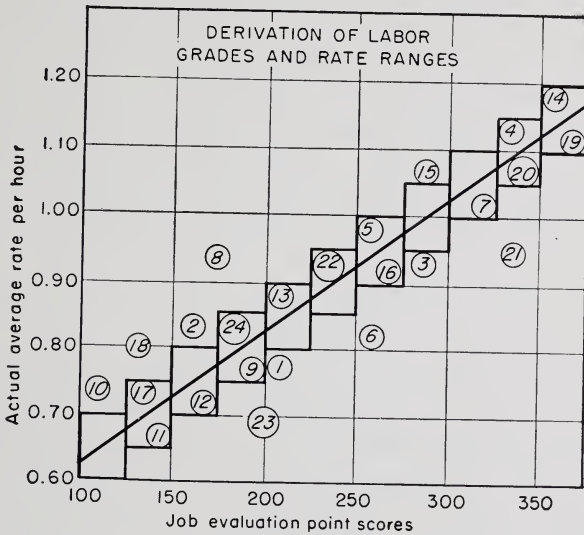
The first step in attacking the problem of giving a fair day's pay for a fair day's work is to describe adequately the workman's job. By classifying his jobs in accordance with the descriptions mentioned above, the employer places himself in position to compare the wages paid in his plant with the rates of pay for similar work in the community or in his industry. In this connection, the various trade and business associations should not be overlooked as a source of information on current rates of pay.

Of even greater performance than a comparison of rates of pay in any plant with the rates being paid in the community or industry is the relationship between the rates being paid for one job within the plant as compared with the rate paid for another job within the same plant. Conditions vary

³ See Bibliography.

widely from one plant to another—jobs bearing the same title in two different plants differ from one another in such important aspects that it is difficult to determine within a few cents what the relative values of the two jobs really are. Community rates may serve as only a general yardstick in assessing the value of a job in any given plant. The status of the wage structure in one plant may be roughly compared with the community wage level by noting how many people leave the plant to go to work for other companies within the community because they believe “the pay is better.”

RANKING JOBS AND WAGES



When it comes to the comparison of rates for one kind of work with another in the same plant, we have a very different situation. Since other conditions of employment are identical, in this situation, the management and the employees are able to gauge quite accurately the value of one kind of work as compared with another. Because the individual employee is in position to know the facts, in his own plant, concerning the relative difficulty of his job as compared with the relative difficulty of the work performed by a fellow employee, he will feel that he is being discriminated against if he does not receive what he considers equitable pay. He will feel that the management just is not interested in seeing that he is properly paid. The experience of many companies will support the statement that employees often quit a job because of such inequities in the rate structure in one plant and accept employment at a lower rate of pay in another plant. A review of the factors affecting morale will furnish an explanation for this; emotional responses to working conditions are frequently as important as rational responses in determining what a workman will do.

This situation may be avoided by a relatively simple, systematic analysis. A committee composed of persons qualified to know (superintendent, foreman, and workman, for example) can review the requirements of each job in the light of the job description and simply rank each job in accordance with the difficulty of the requirements of the job. Such consideration would surely include working conditions and the amount of training and experience required to perform the work.

This is called the "ranking method" of job evaluation. More elaborate methods are available, and for those who wish to go into this problem in detail, we recommend the reading of any one of the many fine books written on the subject of job evaluation.⁴ When the jobs have been properly ranked in accordance with their difficulty to the satisfaction of all concerned, differentials in rates of pay can be assigned to each job, bearing in mind that the whole rate structure so established must be in reasonable conformance with the rates being paid for similar work by other employers in the industry and the community. But the greatest concern is to see that the jobs are correctly rated *one to another within the plant*.

EMPLOYEE PARTICIPATION IN COMPANY AFFAIRS

One of the most important of the modern relation techniques is that of learning *how to secure the participation of employees* in formulating policies, designing good procedures, and establishing good practices.

Oftentimes when workmen express a desire to participate in this way, the management immediately concludes that the employees are asking for "the combination to the safe." And sometimes they are! This condition, however, almost invariably arises as the result of the management's attempting to enforce policies conceived in a vacuum without regard for the opinions of employees. A better understanding of discipline and morale is a prerequisite to the undertaking of an extension of employee participation in those companies which have not done as much along this line as may appear desirable.

Encouragement of participation certainly carries with it the risk that employees may attempt to usurp the right and responsibilities of management. What business activity does not involve risk? Occasionally we see managers who simply throw up their hands in the face of this problem and abdicate their positions. Employees do not want this. However, they desire to participate constructively in the formulation of labor policies if high morale is to be achieved, since *cooperation is the essence of morale and cooperation means participation*.

⁴ See Bibliography.

A weak-kneed manager who accepts unreasonable suggestions or demands from his employees is as poorly regarded as the imperious dictator who rides roughshod over his people with strong-arm disciplinary methods. *In general, the management should accept the responsibility for initiating changes in the existing state of affairs.* Such proposals should be definite and complete and should come in response to visible needs. Before being put into effect, they should be discussed with as many of the work force as is practical or desirable in the light of those who will be affected. The reasons for the proposal should be honestly and clearly explained without withholding any pertinent facts. Sufficient time should be allowed the employees to consider the matter.

Granted that some situations require change, it is still true that many companies drop changes of all kinds like a bomb among their employees for the very purpose of taking them by surprise and preventing them from participating. Such companies seem to prefer the *fait accompli* and a strong arm to good morale. If, whenever possible, employees do participate in the formulation of changes, a margin of safety is built up for the introduction. The employees have confidence, since the matter has been referred to their consideration.

There is one further point of great importance in employee participation. Management should retain final authority in all these matters and should openly state that it is doing so. Unfortunately, some managements invite employee participation, allege that the decisions are controlled by the employees' opinions, and rely on their sales ability "to convince 'em it's their idea" while pursuing a predetermined course of action with no consideration to the opinions of those consulted. What nonsense! All of us have been run over by a steam roller on occasion, but never without disastrous effects on our morale. A frank, authoritative statement is far more to be desired than such deceptions.

BEWARE OF MORALE CAMPAIGNS

Ignoring the true concept that morale is a social condition, pseudo-scientific quacks offer their services now also to small plants to put on campaigns which are often referred to as "morale builders"—campaigns to indoctrinate the workers with some pet idea of the management. They conduct surveys of morale before and after giving the employees a dose of their particular morale medicine. These surveys purport to prove that their brand of snake oil is worth the fantastic fees they sometimes charge. These experimenters blithely compile "statistics" to prove that the campaign instituted on their advice is the cause of improved production. The real truth may be that the improvement resulted from the workers' belief

that, as a result of a shift in world politics, the product they are working on has assumed new importance to the national welfare, or they simply produced more for some other reason.

The point is that in dealing with morale problems we are dealing with nonfactual, abstract conditions. As such they are not subject to objective measurement or verification. In spite of the impossibility of making such measurements, many businessmen, accustomed to dealing with blueprints and specifications, are easily persuaded that the same techniques can be used to solve social problems that are used to solve engineering and other production problems.

HOW TO OBTAIN REAL MORALE

A continuing program of sound policies, techniques, and practices is a better answer to the morale problem than an occasional high-pressure campaign. In order to develop the more important features of such a program it is essential to have a more complete understanding of the characteristics of morale. Then, with an understanding of the characteristics of morale one has a standard against which to gauge the likely effect of any particular labor-relations technique which may be considered for use in a particular business establishment.

Any group of individuals living or working together establish relationships with each other in such a manner that the group can maintain its entity with as little personal friction as possible. These relationships are established over a period of considerable time by a wide variety of means. A social code is built whereby each person enjoys particular rights, privileges, and prestiges. Anything which causes a shift in the relative position of one member of the group necessitates a complete readjustment of each person to a new social situation. Is it any wonder that we all resist change in the established order of social things, whether it be the home, the church, the plant, or the national political situation, unless we are convinced that our own interests will be clearly benefited thereby?

Here is the heart of the morale problem: Employees usually suspect the motives of the company when policies, procedures, or practices are altered and they are certain to resist change of any kind when it destroys the social equilibrium of the group affected. Once these facts are appreciated, one is better able to perceive why many employee-benefit programs designed to improve morale are doomed to failure. The facts in the matter may be that the program actually does benefit the employees; they may be convinced of the sincerity of the company in promulgating the plan; but because of the changes it effects in the social order of the group, the net results may be nil or negative.

If the group thinks the program is merely some new kind of a speed-up to get more work out of the employee, the reaction is certain to be bad. That the new welfare activity by the company is truly the manifestation of a sincere interest in improving the lot of the worker makes no difference if the employee feels—believes—takes the attitude—that “this is another fast one the company is trying to put over.” If a welfare program is carried on at a hysterical level designed to keep the worker completely occupied during every waking moment with activities that the company thinks are “good” for him, the employee will strongly express his antipathy for the program.

On the other hand, *programs directed toward greater security for himself and his family, with an opportunity for him to participate voluntarily in the benefits of group action without substantial encroachment upon his personal time, are well received.* It is true that welfare programs in small towns, dominated by a single company, may be much more paternalistic and much more social in nature than such programs could be in large industrial centers.

But the way of life is growth, and the nature of growth is change. It is true that we must “keep abreast of the times,” we must “meet competition,” we must “improve.” And this may well bring the management into conflict with the tendency of the employees to establish static conditions within a social group.

The ill effects of this necessity for change can be ameliorated to a marked degree by careful planning, clear thinking, and the avoidance of unnecessary social experimentation and change for the sake of change. Some personnel men seem to feel that they are not earning their money unless they are putting some startling new idea into effect.

When changes are necessary, the importance of convincing employees that such changes are going to benefit them cannot be overemphasized if good morale is to be maintained. It is not a question of whether the changes are, in fact, necessary or beneficial, but whether the employees think the changes will be helpful. And this difference in attitude or morale always does determine the success or failure of a new idea.

Timing plays a most important part in the successful revamping of policies or procedures. Good employee communications demonstrate their greatest value in bringing about a readiness for and acceptance of change.

CREATE STABILITY AND GET MORALE

Disruption in the social order of things is frequent and violent at the lowest level of the organization because employees at that level, required to make adjustment and adaptation to new situations, are those who are least

capable of making such adjustments. As one goes upward in the organization and away from ever-changing requirements of production, he comes to the realms of higher, inherently more stable levels. An opportunity is offered by this situation which may help in solving the most difficult aspect of the morale problem—meeting and fulfilling the desire on the part of the employee for stability in an ever-changing industrial world.

A clear-cut, well-publicized statement by top management of its fundamental labor policy should be used to give the production worker such a feeling of stability. Such a statement coming from the management is invaluable in building morale, for the management, in the eyes of the rank-and-file employee, is a symbol of the American free-enterprise system—a symbol of the American way of life in which he believes thoroughly. He can freely give his allegiance to this symbol of the freedom and plenty of American production to which he refers in his conversation as “the company.” Just as in his youth he had a father or an uncle who was, in his opinion, a paragon of virtue—wiser, stronger, nobler than the father or uncle of the boy in the next block—the worker now wants his company as his symbol of security.

He scans the newspapers, alert for favorable reports of company activities, plant expansion, new products, the activities of the company executives in community affairs. All these things improve his confidence and his morale. They are concrete evidence that his loyalty is well placed.

It is regrettable to note how few companies avail themselves of these opportunities to improve their employee morale. In companies lacking a published labor policy, at the very place where the employee looks most longingly for symbols of stability and permanence, he finds none. He can only assume one reason for this, *i.e.*, that the company does not issue a statement of labor policy because it is contemplating some change in its policy which may affect him. Unless there are compelling reasons to the contrary, labor-relations policies should be made known to every member of the organization. In small plants this can be readily done.

When such relations policies are established and made known to the men, they must be actually applied and carried out. It is a simple matter to make the statement that it is the policy of the company to “place employees in the kind of work best suited to their abilities,” but quite another matter to apply the policy in practice. And when the relations program reaches into the field of pure welfare activities, such as set forth in the policy “to encourage thrift,” it begins to take on some very serious aspects, not in the sense that thrift is not a desirable virtue, but in the sense that an employee may feel that what he does with his money is none of the company’s business. It is at this point that the employee begins to wonder about the desirability of the “all-wise” management as compared with the

delights of individual initiative and liberty and possibly the advantages held out by some union.

HOW TO GET MORALE IN THE SHOP

Turning from the morale problems affecting the working force as a whole to those of the smaller groups, we have the foremen acting for "the company" as the symbol to which the employee looks for guidance. At this level are the problems of changes in the hours of work, rates of pay, and working conditions. Here it is that we hear so many situations weighed in terms of "fairness." Almost invariably the employee interprets fairness to mean that his earnings, his security, his social position, his prestige in the group do not suffer as the result of a foreman's decision or change in company policy.

When a complaint is made, the employee wants "fair treatment" in the handling of his complaint. *But what is fair treatment? What is a just complaint?*

Complaints may be grouped into three categories, according to Roethlisberger and Dickson in their volume *Management and the Worker*.⁵ They suggest that *one class of complaints is based upon opinions which the employee forms from things which he can see or touch*. Physical operations such as moving, turning, handling, lifting, assembling, as well as logical operations such as counting and verifying, enter into their determination. These are complaints which can be resolved by test or measurement. For example, the statement that "the tool is dull" involves standards which can be agreed upon by most people technically competent to judge such matters. This type of complaint is relatively easy to resolve, since it involves concrete facts which are open to repeated demonstration and objective proof.

A second class of complaints differs from the first in that they are sensory perceptions involving sensations of heat, cold, pain, nausea, thirst, fatigue, etc. They are terms whose meanings can be determined only socially or biologically. They vary with time, place, age, personality, social status, and temperament. For example, "the work is dirty," "the work is hard," "the room is hot." Here we begin to get into the gray area of the employee's subjective perceptions. If he thinks the room is too hot, it is too hot as far as he is concerned even though some other worker may simultaneously be complaining that the room is too cold. Nonetheless, the complaints involve enough objective material to enable standards to be agreed upon that are acceptable to most employees.

⁵ F. J. Roethlisberger and William J. Dickson, *Management and the Worker*. Cambridge, Mass., Harvard University Press, 1929.

The third class of complaints involves sensory experience to only a limited degree. They involve the hopes and fears of the complainant. They are complaints arising from the changing social environment and therefore are in no way subject to measurement or verification. They exist only because the employee believes they exist. Examples of these are complaints that "the rates are too low," "ability doesn't count," "seniority doesn't count."

It is in this third group of complaints that the real difficulty is encountered. For example, examine the complaint that "the rates are too low." Management assumes that a fair rate is one that is set in a systematic manner on the basis of past performance or on time and motion studies and in accordance with rates paid by other concerns in the same area or industry for comparable work. But this is management's definition of a "fair rate." According to the employee, the piece rates are too low when they are not in accordance with his changing personal requirements or his hopes and desires. Depending upon whose definition is used, the complaint may or may not be justified. Here is a familiar type of problem which the foreman is constantly being asked to resolve to the satisfaction of the complainant if high morale is to be retained in the working force.

To handle these problems effectively the foreman must consider the psychological form of the complaint as well as the material content. They must not be considered only on the basis of the apparent facts themselves; they must be treated as symptoms or indicators of personal or social situations which must be explored fully.

The recognition of the employee's social problem and the provision of an opportunity to discuss it with an understanding and sympathetic listener often provide the complainant with a mental outlet which changes his attitude toward his job in a fashion that could never be accomplished without recognition of the social and psychological factors motivating his complaint.

These illustrations serve to spotlight the difficulties that arise when changes are necessary in the hours of work, rates of pay, or working conditions of the rank-and-file employee. It is highly desirable that he be prepared in advance to accept these changes and that their social effects be minimized in so far as possible if we are to achieve high morale.

COMMUNICATIONS BETWEEN MANAGEMENT AND MEN

All of us have at some time or other experienced the horrible feeling of frustration that accompanies the inability to express oneself adequately, as happens even among friends and members of a family. If it is difficult

to secure complete understanding in the family circle, it is not surprising that the art of communication is so difficult to master in the industrial situation. There, one is dealing with people of divergent interests, sometimes conflicting, and with people having heterogeneous religious, social, and racial backgrounds. Nonetheless, here is an area in which vast improvement can be made in most industrial organizations and often also in small plants.

There has for some time past been considerable misunderstanding on the part of many managers as to the limitations which the labor laws place upon their right of communication with their employees when the activities of a union were involved. Although there has been much comment on the provision of the Labor-Management Act of 1947, which clarified these rights, they had already been established by the courts under the provisions of the Wagner Act. *Essentially the only important limitation upon the "free speech" of an employer in discussing labor matters with his employees is that he must make no promise of benefit or threat of coercion in his speech.* He is further limited in certain technical situations, but these limitations are of minor importance and may, generally speaking, be dismissed from consideration in the day-by-day handling of communications and relations.

To have adequate communications a definite plan is needed. It must be as complete as a production-control plan, a cost-accounting program, or the plan for controlling the quality of a product. The *purposes* of the communications program must be established, the *methods* of procedure outlined, *duties* assigned, *authorities* granted, and *subjects* approved as in any other type of business planning. *Control* of communications certainly must not be overlooked.

An illustration of the necessity for control is found in a recent case concerning a large corporation engaged in the manufacture of a consumer's good. The foremen of the company had been undergoing about 6 months of training by the conference method under the direction of a very expensive expert at the cost of thousands of dollars of foremen's time in attending. The prime objective of the conferences was to convince the foremen that all supervisors were one big happy family with no distinction between the highest and lowest levels of management. Another staff department, at about the time the foremen were convinced, released a schedule of discounts on purchases by employees of the company's product which indicated that executives would receive one discount (the largest), department heads another, and the foremen another. Proper communications would have kept each of these staff departments informed of the other's activity and would not have permitted the formulation of such a policy, let alone the release of such information.

Primarily a communications plan should consist of a determination of:

What should be said?

By whom?

To whom?

How?

When?

Definite channels of communications should be established to encourage the flow of communications from the employees up the line to top management as well as from top management to the employee at the bench. Other channels must be provided for an adequate exchange of information between those at the same level with each other. In the up-and-down flow oral information is often so modified by its passage that the originator would never recognize it. The production worker knows that his foreman does not like to hear bad news, so his story to the foreman rarely ever loses any of its good points when he tells it. By the time it has been filtered by the various supervisors and finally reaches the president of the company, everything is wonderful in spite of the fact that the company is losing money and the president is lying awake nights trying to figure out why. In most instances when a union has organized a company as a result of dissatisfaction among the employees, the president is amazed to hear that his employees are dissatisfied with their lot and is surprised by the results of the NLRB⁶ election.

In the upward flow of information, there is no substitute for personal contact by top management with rank-and-file employees, except possibly through meetings. Ordinarily no means of written communication from the production worker to the president of the company is provided. (Properly administered suggestion systems sometimes alleviate this situation to a minor degree.) Even if such a channel were provided, it would not be used, inasmuch as the ordinary shop employee has neither the inclination nor the ability to use it.

Such contact is also important in the downward flow of information. It is true that top management can and often does communicate with employees by means of written and printed statements, bulletins, general meetings, etc., but none of these is an effective substitute for personal contact. The proper handling of the working force is the most important single factor in the successful operation of a business, yet many managers seem loath to devote the amount of personal time to the problem that they are willing to devote to less important matters. It is of prime importance that communications from the management should, in many instances, be made to the family of the workman as well as to the workman himself.

⁶ National Labor Relations Board.

The timing of employee communications is of the utmost importance. Nothing is more distressing to a foreman than to have his subordinates informed through the newspapers of important news concerning the company which the foreman himself does not know. This seems to be particularly true of the release of financial information concerning the company. For some unknown reason it seems customary to release information concerning the earnings of the company, for example, to the newspapers without releasing the same information to the employees at the same time, thereby indicating that the management thinks the employee is not so much interested in the financial welfare of his company as the general public! The same thing often happens with new developments, plant expansions, etc. What a golden opportunity to improve morale is being missed! This is a kind of employee participation which often is overlooked.

Management must sincerely try to anticipate and answer questions in the minds of employees; otherwise, they will not be conditioned to receive information that the management is particularly anxious to convey and to have them understand. No one can start suddenly in a depression communicating the need of greater productivity or the need for cutting wages and expect to be convincing. Systems of communication must be introduced gradually and naturally, with the sincere purpose of securing employee participation in contributing to the solution of mutual problems. The system of communication not only must encourage questions but must answer them.

LABOR LAWS AND RELATIONS WITH UNIONS

In view of all the previously described means of establishing good relations, how so many large and small manufacturing firms have to resort to the laws and regulations in order to settle arguments between their management and their men is an interesting point to ponder.

Yet disputes, grievances, lockouts, and strikes are increasing in number and intensity. They amount to millions of man-hours of idleness each year and cost enormous sums to the workers, companies, and the economy.

The fact that in nearly all instances unions are representing the workers before the authorities does not prove that the unions cause all these troubles, but it should stand to reason that the managements have not succeeded in establishing satisfactory labor relations. Labor troubles are a sure sign of poor labor management.

It can hardly be within the scope of this chapter to explain, interpret, or expand upon all the laws that exist, nor can it cover in detail what any manager might do in establishing his company's relations with the unions.

But since laws are to be observed and should be known to the manager

of even the smallest plant, the texts of these laws should be on hand for ready reference and consideration. The most important law of this kind is the *Labor Management Relations Act* of 1947, also called *Taft-Hartley Act*, which regulated the legal aspects of labor relations. Revisions of these regulations are available and should be obtained in due time from the nearest Labor Relations Board or any other public office dealing with labor-management relations or direct from the Government Printing Office, Washington, D.C.

SUMMATION ON WORKERS AND RELATIONS

Laws, it should be kept in mind, are important and help in establishing relations with labor, but there is no doubt that legal thinking alone or dealing through legal channels will never give best relations. The real know-how of labor relations lies in the direct dealings between the manager and all the men.

CHAPTER 11

HOW TO GET ALONG WITH THE UNION

BY

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THE POSSIBLE ATTITUDES TOWARD UNIONS

There are three fundamental policies which both big and little business can follow in dealing with the union:

1. Fighting the union
2. Tolerating the union
3. Actively cooperating with the union.

The object of all three of these policies, according to any manager, is industrial peace. The fact is that at some time or other any one of these three policies has achieved industrial peace.

Following World War I, organized management by and large pursued policy number one with marked success. They fought the unions, licked the unions, and had pretty much their own way. There was industrial peace and for a very simple reason: the unions had been reduced to such ineffectiveness that they were unable to assert themselves. Thus there was little overt evidence of labor dissatisfaction. Management thought that the unions were dead and that the new miracle of eternal prosperity plus a paternal interest by enlightened management would keep them that way.

¹ The International Ladies' Garment Workers' Union is well known for having brought about satisfactory employment and wage conditions for the workers as well as for having stopped the cutthroat competition and pernicious abuses of the small plant owners that for decades prevailed in the industry. This was achieved by hard-headed union policies and by giving practical management counsel to the employers. Today, American women are the best dressed in the world, garment prices are within the reach of all, workers are assured of strong union backing, and the industry is healthy and progressive. The author is director of the Management Engineering Department of the ILGWU. Because of the pioneering work of the department, Mr. Gomberg has been called upon as a consultant by the United Automobile Workers, CIO; the International Association of Machinists; United Automobile Workers, AFL; United Textile Workers, AFL; Commercial Telegraphers Union, AFL; and others.

THE SMALL PLANT MANAGER AND THE UNION

Now, of course, many will say, small plant management doesn't fit into this class. Your plant is little business. You have always treated your employees fairly. You know each of them by his first name. You get along with them fine. Each man has always known he could come to you in time of trouble. There was the time when the wife of faithful Tom became ill. You didn't say anything; you knew that Tom couldn't have any savings. You just quietly told the doctor to send you the bills. You knew your men. Why, it isn't so long since you had to punch in and out of the factory yourself. You know what hard work is. You are proud that you started at the bench. You like nothing more than to get together with the boys at the annual plant picnic for a few hands of pinochle. In spite of all this, however, the men are none too happy. They think of having a union. The union then appears. What are these outsiders doing in the plant, and who says that you have to talk to them? Why can't you do what you've always done, talk directly to your own men? Could not any man come in, tell you what's on his mind, and have his grievances adjusted?

REASONS FOR UNION ACTION

Perhaps the best answer to these questions is to examine the basic reasons for the unions. Professor Slichter of Harvard lists the purposes of unions as follows:

1. To provide a vehicle for the *setting of wage rates*.
2. To replace the little oriental despotisms that made up our business world with democracies governed by a *code of juridical law*.

The fact of matter is that from the point of view of the union the good treatment is something about which the manager is free to be the sole judge. He can extend it or withdraw it at his pleasure. It was not bestowed upon the men as a matter of right, but as the result of the paternal behavior of an enlightened despot. There is nothing to prevent him from changing his mind and his policies at any time.

Then again, if a plant is part of a highly unionized and competitive industry, the union feels that any nonunionized employees are merely taking advantage of a free ride. Ability to pay the prevailing wage or a wage in excess of the prevailing wage depends upon competitive position. Certainly a plant would not be able to pay certain wages if the competitors were free to cut wages at will and reduce labor costs below those which the nonunion

plant is paying. The union, of course, sets the wage levels of the competitors. Because of this, the competitive position of each plant is protected and some are able to pay high wages. In other words, the nonunion employees are reaping benefits at the expense of their fellow workers who through the union are striving to maintain a stability which will permit the payment of a living wage.

Telling a trade unionist that employment conditions are so good in a factory that the employees do not need a union is bound to be as well received as telling the management of an establishment that the factory operates so satisfactorily that the shareholders have decided to dispense with the management of the firm.

For these main reasons, and because any worker acting singly has no influence, unions feel that just as the function of management is an integral part of the business structure, so the trade union is a substantive part of the employer-employee relationship. Discussions about personnel policy and labor relations without the union in the picture is like a performance of *Romeo and Juliet* with the love interest omitted.

Thus it happens that any factory, large or small, may become the target of an organizing drive. Now, if a manager is mainly interested in staving off the unionization of his factory, this chapter has very little to offer him. He should find someone whose specialty it is to find loopholes in our national legislation. Some lawyers think they are well versed in all the stratagems by which a union can be kept out of a plant. At the end of such efforts, unionization may have been staved off, but at a price. On the other hand, the management may well find that it has to deal with a group dedicated to seeking a neurotic vengeance.

HOW ABOUT TRYING TO GET ALONG WITH THE UNION?

Obviously then, if opposing the union is a somewhat fruitless and possibly hopeless effort, what are the relative merits of tolerating the union and actively cooperating with it?

If it is assumed that unionization is both a good thing and almost inevitable, then management may want to know how best to get along with the union. Unfortunately, one cannot give any general formulae that will fit every case. General formulae have a habit of degenerating into platitudes like "be fair" or "remember that you are dealing with human beings." Such directions are hardly constructive enough, and often, indeed, they serve merely to rationalize whatever policy, good or bad, the employer wishes to apply.

In order to understand how to get along with unions, it will be most useful to consider and analyze those things which unions feel they need for their existence and see how they compare with the ideas of management.



Negotiations between the employers and the union. (Photo by Harry Rubinstein, ILGWU.)

LEARN ABOUT THE HISTORY OF THE LABOR MOVEMENT

Most employers of past generations received their first information or misinformation about unions when they heard about various radical groups who were trying to effect a complete revolution in our economic life. It was not at all unusual for a manufacturer early in his experience to link words like collective bargaining, the cooperative commonwealth, and the dictatorship of the proletariat all in one breath. Thomas Roy Jones, the head of American Type Founders, points out that in his early training he had never received any instruction on how to get along with employees, much less employee organizations like unions. Fortunately, the newer generation of engineers and managers is attending educational institutions where collective bargaining and industrial relations constitute an important part of the curriculum.

The labor movement, actually, first arose essentially as a social-protest movement against the economic and social abuses to which workingmen were subjected. Initially it attracted a whole host of social reformers and revolutionaries who looked upon trade unions as valuable social instruments to aid them in achieving their ambitious plans to reorganize society. Early

writers on the labor movement attempted to classify unions on the basis of the ideology that their leaders professed.

However, the day-to-day activities of democratically organized unions compelled them to pursue a line of action which was dictated by the economic and social environment within which they were operating. Strangely enough, both those unions who started out with radical or socialist aspirations and those who either did not question the social order or even expressed loyalty to private enterprise discovered that they were doing the same thing. The philosophy pursued by unions, either consciously or unconsciously, was first formulated by Professor Selig Perlman of the University of Wisconsin, whose theory of job-conscious unionism built the whole dynamics of the labor movement around the job.

Professor Perlman has pointed out that unions base themselves on a consciousness of limited job opportunities—a situation which requires that the individual worker, both in his own interest and in the interest of the group to which he belongs, occupy his job on condition of observing the common rules for the group formulated by his union. The union in turn seeks by collective bargaining with the employer to establish *rights in the jobs both for the individual and for the whole group*.

The preoccupation of trade-union leadership with these problems, irrespective of the political and ideological conviction professed by any of them, soon places any utopian panaceas into the background. Negotiating *agreements*, administering the *contract*, handling *grievances* become the full-time job of the trade unionist. Political activity is strictly subordinated to these considerations. The political activity in which trade unionists do engage is generally prompted by the conviction that proposed or existing legislation will either hinder or help them in their very mundane day-to-day activities.

The one exception to this rule is the very small group of unions run by Communists. The Communist leadership of a trade union can best be understood by comparing it with prewar Nazi management of the General Aniline Corporation. The primary purpose of both institutions was subverted to serve the needs of a foreign office of a foreign power. Thus, when L. H. Hill ² attempts to secure union respect for some arbitrary management prerogative by saying that in Russia managers exert complete control over the managerial function, American trade unionists are hardly convinced. They have always maintained that the totalitarian Communist and the antiunion die-hard employer shared much more in common than they cared to admit.

Since Communist unions in their very heyday never represented more than a small fraction of organized workers, they can safely be ignored.

² L. H. Hill, *Pattern for Good Labor Relations*. New York, McGraw-Hill Book Company, Inc., 1947.

THE MOST IMPORTANT OBJECTIVES OF UNIONISM

Thus we can summarize the main objective of workingmen in organizing and joining established unions in one word: *security*—*emotional security, social security, and economic security*. Consideration of social and economic security will make up the bulk of this chapter. The emotional security is linked to the status of the worker in the shop, where he expects good treatment because it is his right as an industrial citizen. The fact that the employer may be a good fellow or an irascible neurotic does not determine the need for the union. It merely determines how well the union and the employer will get along with each other. The need for social and economic security may be summarized in Sam Gompers' dramatic phrase: "The worker wants more."

STUDY THE STRUCTURE AND FUNCTIONING OF THE LABOR UNIONS

Before any manager would consider himself ready to deal with any union, it is important for him to know something of the structure and functioning of the American trade-union movement with which he is dealing.

American trade unions are organized into two principal federations of autonomous *international unions* with branches in Canada—hence the name, international. These federations are the American Federation of Labor and the Congress of Industrial Organizations. Whatever may have been the original reasons leading to their division into two federations, the functions they perform and principles they pursue are virtually identical. The older organization, the AFL, is made up of 102 international unions and 196 Federal unions. A Federal union is a temporary organization for organizing and administrative duties, working directly under the national AFL until such time as its workers will be assigned to their appropriate international union or a new international union is created to cover a jurisdiction not held by any existing international union. Thus office workers were members of Federal locals until such time as there were enough locals to charter an Office Employees International Union. The CIO embraces in its membership about 6 million, while the AFL membership includes about 7 million.

The *Railroad Brotherhoods*, which include within their membership the operating employees, are outside the two principal federations. However, they work closely with them.

Other *independent* unions, like the United Mine Workers and the Inter-

national Association of Machinists, have been in and out of the CIO and AFL and can eventually be expected to return to the regular federations.

The various unions of both the AFL and CIO organize themselves on a local basis into state, county, and city groups for sponsoring legislation of importance to the labor movement as a whole. All unions have by now 16.5 million or more members.

It is important to know that to distinguish between the AFL and CIO as *craft and industrial unions*, respectively, is meaningless. Unions organized along strictly craft lines, such as the barbers, are associated with the CIO. On the other hand, old-line AFL organizations like the Teamsters Union have extended their jurisdiction to warehouses, so that to all intents and purposes they have become an industrial union.

The living structure of a trade union is dictated by the problems the union faces rather than by a preconceived academic theory. The United Auto Workers Union, CIO, is a typical industrial union. Still, they were compelled to give recognition to craft problems by the creation of a special Tool and Die Council charged with taking up the special problems of highly skilled workers.

On the other hand, the original craft structure of unions like the International Ladies' Garment Workers' Union has been modified by the creation of joint boards of the different crafts, so that the employer is able to deal with one representative for all the workers in negotiating collective agreements.

WHY THERE ARE JURISDICTIONAL DISPUTES

The reasons for jurisdictional disputes become apparent at once when the motivating forces and the underlying structure of the trade-union movement are understood. The impression which management has of jurisdictional disputes is that they flow from the selfish desires of labor leaders to extend their sway. Actually, as Barbash³ observes, when union election time occurs and the rank and file has its direct say, "No fact in a candidate's record for reelection is more potent in many unions than his ability to win for his union in jurisdictional controversies with other unions." These disputes arise primarily because each union is interested in maximizing its job opportunities as a result of either an already existing shortage of jobs or an anticipated shortage. Thus the slogan of the carpenters' union, "once of wood, always of wood."

Jurisdictional disputes are not confined by any means to disputes between international unions. They very often take place between two local unions of the same international union. Thus a dispute may arise between

³ Jack Barbash, *Labor Unions in Action*. New York, Harper & Brothers, 1948. p. 34.

the house dressmakers' local and the street dressmakers' local of the International Ladies' Garment Workers' Union over the local to which the workers of a particular establishment ought to belong. In the ILGWU arrangements have been made for such cases, and since the locals acknowledge a strong international leadership, this dispute will be settled long before it has a chance to reach the public notice.

In all likelihood, if the federations exerted the same degree of authority over the autonomous international unions which the international union exerts over its local unions, most jurisdictional disputes would be solved as readily. However, the problem then arises as to whether management would be happy with the concentration of so much power at the top of the labor movement, which would still more strengthen union government and administration.

HOW UNIONS ARE MANAGED AND OPERATED

The *annual convention* is the highest legislative body of both the AFL and CIO. It is made up of delegates elected by each of its constituent international unions and affiliated central bodies. Inasmuch as the international unions are autonomous organizations, it is seldom that questions of immediate collective-bargaining interest to employers arise at these meetings. The convention devotes itself to formulating broad social and political policy designed to influence the environment within which collective bargaining takes place. The conventions elect executive councils that function as governing and policy-making bodies between conventions. At the head of the federation are a president and secretary-treasurer. Their function is to administer the various staff departments such as organization, information, research, and legislation.

The government of the international unions, on the other hand, is much more highly centralized. The executive council and national officers of the international union generally exercise very close supervision over the subordinate locals, particularly in the matter of collective-bargaining policy. The reason for this is very easy to understand when one stops to consider that the agreement formulated between a local employer and a local union has a powerful effect upon the negotiating opportunities of sister locals elsewhere. Small plants, particularly, are much more subject to competition than the large factories. If every local were free to negotiate a separate wage policy, undue advantages would accrue to one employer while others would be threatened with going out of business.

It has been this phase of collective bargaining which has been at the bottom of much of the friction between business and labor. Many a manager has bitterly complained that he would do all right if he were free to deal

only with his local union—it is the interference from the head office which they resent. But this supervision is needed to obtain uniform union action in all plants.

HOW MANAGEMENTS AND UNIONS CAN WORK TOGETHER

Perhaps this is as good a place as any to review the objectives of unions and analyze to what extent they conflict with the avowed objectives of management and to what extent the two sets of objectives can be made to dovetail into workable cooperation.

Professor E. Wight Bakke⁴ is among the more profound students of relations between unions and management. He has come to the conclusion that at the basis of most specific difficulties reported was the fact that both management and union leaders were expecting the other to behave in a way which each believed impossible if they were to survive.

Professor Bakke⁵ then notes a number of guideposts upheld by management which seem to formalize the main points of conflict:

Industrial relations are primarily and basically a matter of relations between management and employees, its own employees.

The first objective of industrial relations, like that of every function of management, is the economic welfare of the particular company.

Industrial-relations arrangements must leave unimpaired management's prerogatives and freedom essential to the meeting of management's responsibilities.

Unions on the other hand, he states, are guided by two fundamental principles, both of which have already been noted:

1. A union is an employer-regulating device. It seeks to regulate the discretion of employers at every point where their actions affect the welfare of the men.
2. The union is a device to reduce or eliminate competition among workers by establishing uniform rules and standards and compelling workers to conform to them.

The conflict between these two sets of abstractly formulated principles is at once apparent. In a sense, there is not a single management function which does not come within the collective-bargaining area. Bakke observes that he could not get a clear-cut definition of the area boundaries of collective bargaining from trade unionists. On the other hand, however, he does point out that he could not get any representative group of managers to agree among themselves what the area of collective bargaining should be.

⁴ E. Wight Bakke, *Mutual Survival*. New Haven, Labor and Management Center, Yale University, 1946.

⁵ *Ibid.*, p. 3.

On the basis of this formulation, the country ought to be in the throes of perpetual industrial war. Yet industrial peace, coming from collective bargaining, characterizes a much greater part of the economy than does industrial war. The failure to recognize this peace perhaps arises from a false idyllic picture of what industrial peace is. Professor Selekmán of Harvard has observed that by and large industrial relations in our country are very good. The peace that we have is the normal peace, which is occasionally disrupted by argument in the same way that a family spat develops. By and large, American families manage to get along with one another, yet there is hardly a family in which at some time or other an argument does not occur between husband and wife or mother and child. This is the kind of living peace we have in industrial relations. The unrealistic peace pictured as an objective by too many social observers more closely resembles the peace of the churchyard.

The reason that labor and industry have managed to develop a pattern of live-and-let-live behavior is because they have avoided arguing in terms of management prerogatives, union rights, and the interests of workers. As Bakke has put it,

They worked on a less abstract level. They dealt with specific and practical definitions of the points at which management had to retain absolute control and the points at which it could share control. They focused their attention on the practical job to be done. They were willing to resolve any conflict by an arrangement which would meet the practical, if not the abstract, needs of the other.

If there is a fundamental principle of collective bargaining, this is it. Its acceptance may lead to an even more fruitful relationship between the union and the employer than that of collective bargaining. It can lead to an active union-management cooperative relationship. Many of the unions in contractual relations with small plants and businesses have practiced this cooperative relationship as a fixed policy. The reasons for this policy of selfish altruism become quite apparent after a little reflection of the compelling facts.

UNION-MANAGEMENT COOPERATION IN PRACTICE

Take, for example, the International Ladies' Garment Workers' Union. The first strikes of the ILGWU were aimed at the immediate employers of the workers, the clothing contractors. One of these contractors, David Gold, operated the S. J. Contracting Corporation. He employed about 50 workers. About 30 of them were sewing-machine operators. The rest either pressed the finished garment or performed a number of other miscellaneous tasks

under the general heading of floor work. Gold had a partner, Joe Riley. Riley would manage the manufacturing. Gold would go into the market every morning to visit jobbers to see whether or not they had any work available for him.

The jobber with whom Gold did most of his business was the Saks Suit Company. The Saks Suit Company purchased piece goods from a number of converters and textiles mills, employed designers who made up the line of merchandise, and maintained showrooms where buyers would congregate to see the offerings and place their orders. Saks maintained no sewing plant but subcontracted his sewing to contractors like Gold. This gave him the double advantage of flexible plant capacity and freedom from manufacturing problems. The plant capacity varied with the number of contractors to whom he furnished work. Then again, he never had to face the workers who were the most tragic sufferers from the cutthroat competition of which he himself was the victim. Saks liked Gold, but when they talked business, Saks wanted to know only two things, (1) how speedily could Gold deliver his orders, and (2) at what price.

One fine day Gold informed Saks that the prices he was receiving would have to be raised 10 per cent. Saks wanted to know why. "Well, you know the union organized my workers and I've had to raise wages." Saks replied that was his hard luck, there were plenty of other contractors. Gold went to the union screaming, "I told you you'd put me out of business. You've got a first-class wage scale but no work." The union could not very well answer Gold by saying it did not want to trespass upon the prerogatives of management; the workers needed work, not legal claptrap.

The union representative, therefore, went to see Saks. His position was: "Tell the union I employ none of their members. I have no business with them." So the union went out, discovered who the other contractors were who worked for Saks, and in the middle of the manufacturing season called all the workers employed by Saks' contractors out on strike. The union was ready to sign contracts with all these contractors on behalf of their workers. The contractors pleaded with the union, "We've already accepted a price from Saks that makes it impossible for us to give any wage increases at this time." Now the union became the legalist. "Our business is with you, not with Saks," answered the union representative. While they were talking things over at settlement headquarters, a girl came in to say that Saks was asking to see the union representative in the outer office. Saks did not wait to be shown in, he burst in. "But you told us you had no business with us, Mr. Saks. We're ready to send the workers back to work, provided you will sign an agreement that you will employ only contractors who maintain collective agreements with the union." Saks signed. This pattern was repeated all over the industry.

UNIONS CAN MAINTAIN ORDER IN WAGES AND UPHOLD FAIR COMPETITION

When union recognition was achieved, new problems came up. The universal wage-payment method within the industry is piecework. These piecework plans sometimes are dressed up in various wage-incentive-payment-plan costumes, but sooner or later they reduce themselves to how much does a worker get for turning out how much work.

Saks now was a union jobber, but competition was still keen. There were price committees in all his contracting shops whose job it was to settle piece rates with the contractor. Gold would be called in by Saks. How much would it cost to make up this number? Gold would calculate his estimated labor cost, add a percentage for overhead and profit, and tell Saks \$1. Saks would then go to contractor B. "Gold will make this for \$1, what's your price?" B would dig into his profit and say 95 cents. On hearing B's price, contractor C would call his price committee together and say, "Look, I know that if I pay the regular piece rate on this number, I can't get the order from Saks. How about giving me a break on the rate?" The workers would go into a huddle. Work was scarce, they needed the work, they would cut the rate.

It did not stop there because contractors D, E, and F still remained to be consulted. Now, if this gave Saks a real competitive advantage, perhaps something could be said for this practice, but unfortunately all his competitors were doing the same thing. The result of this process was that clothing prices were being subsidized by the dissipation of the industry's capital and the payment of depressed wages.

The union again stepped into the picture. It brought the manufacturers together and announced that hereafter all workers' price committees of the contractors would meet at the same time on the premises of the jobber or at an impartial settlement headquarters and set the labor rate for the garments. Once this was set, the contractors were free to compete among themselves. This placed competition on the basis of relative manufacturing ingenuity and good management.

Industrial engineers were brought into the industry to assist both parties in setting up meaningful bases for the settlement of piece rates. The result has been that both manufacturers and union have been able to lend some stability to an industry which had resembled an economic jungle.

Differences in earnings between workers now reflect a combination of the relative productivity of the workers and the relative efficiency of the management.



Staff members of the ILGWU management engineering department at work. (*Photo by Harry Rubinstein, ILGWU.*)

UNIONS CAN HELP THE SMALL PRODUCER

Since the industry enjoys the union shop, the union feels secure enough to look into rate grievances objectively, to determine whether the worker is at fault or interferences with production, unknown to management, keep earnings down. This, of course, means discussing a whole host of problems with the union; practically every phase of production control including routing, scheduling, and dispatching of work.

Twenty years ago, Gold, his partner Riley, and Saks would have refused to discuss any of these subjects with the union. They were prerogative-conscious. They wanted the union to stick to its job. They would manage the plant. They resisted the union shop bitterly. The official reason was, of course, that they were not going to compel a worker to join a union "against his will." The real reason was that they did not want to make the union any stronger. Today they know that, if they have to deal with a union, it is best to deal with a strong, responsible union. A union shop gives the union rights but also a vested interest in industry responsibility.

Other unions and manufacturers operating in competitive industries can show similar experiences. The Steel Workers Union has been of substantial help in keeping many of the smaller mills operating profitably. These are the results of accepting the union and operating with it cooperatively.

IMPORTANT SUBJECTS OF COLLECTIVE BARGAINING

The typical pattern of most collective bargaining today is toleration of the trade union. This means that collective bargaining includes a comparatively restricted area of subjects:

1. The extent of union recognition and security
2. Wages and hours
3. Vacations with pay
4. Health, welfare, and pension funds
5. Seniority
6. The development of working rules
7. The development of communication lines for resolving grievances.

The Extent of Union Recognition and Security: The first subject that arises in collective bargaining is *for whom does the union speak?* The fiercest strikes before 1937 raged around this question. Before the Wagner Act there was no accepted means of determining the answer except through the demonstration of the strike. There are now adequate legal procedures for deciding this issue. Once the right of the union has been established to represent the men in the factory, the union will press to compel all beneficiaries of the collective agreement to share in carrying its burdens. It will want the union shop. That is, all employees who are in the factory are expected to join the organization after a fixed period. Unions are suspicious of workers who develop principled opposition to membership in unions but feel no corresponding compunction about sharing in the improvements negotiated by the collective-bargaining agents. It has been noted that where provision is made for a contribution also from nonunion workers corresponding to union dues, so that all assist in the administration of the collective agreement, most of this principled opposition to membership disappears.

Practically every *union-shop election* that has been held under the Taft-Hartley Act has shown consistently that over 90 per cent of the employees of factories were in favor of the union shop. Employers who oppose the union shop on principle generally open themselves to the suspicion that what they really want is to keep the union as weak as possible. This in turn makes the union more militant. It, of necessity, must cater to each individual member and plant of the industry, and if a management has put a premium upon union irresponsibility, it is likely to get just that. However, various stratagems have been devised to compromise this issue; there are the preferential shop and the union maintenance-of-membership clauses.

The preferential shop in which union members are given special privileges was first formulated by the late Justice Brandeis when he was assisting settlement of the garment workers' strike in 1910. Both the union and employers found it neither fish nor flesh nor fowl, and it has since been replaced by the union shop.

The maintenance-of-membership clauses were first inserted as a compromise for the union-shop clause by the War Labor Board. They generally provide that union members at the time of the signing of the agreement must maintain their union-dues payment for the life of the agreement. This arrangement, too, is gradually being superseded for the same reason that the union shop superseded the preferential shops. Management eventually gets tired of the turmoil which is maintained in the factory as the union is compelled to maintain an organizing drive to sign up old workers who have refused to join and new workers who are under no compulsion to join. And they join, because it is the logic of a membership appeal that the union can continually obtain better concessions from the management.

Inasmuch as there is quite some variety to what a union can ask for, the union has little trouble in bringing up new issues. The management may find it somewhat difficult to maintain peace without at least considering and fulfilling some demands. Actually, many factories today are operating as union shops without any such stipulation in the union agreement. The management in that manner is able to save face after it has demanded that the "freedom to work" be left intact. On the other hand, the managers who have to get out production have mostly pragmatically adjusted themselves to real life needs instead of relying on ineffective legalistic formulations.

The attitude which management shows toward the issue of union security will be critical in determining how well it gets along with the union, which may even lead to a full program of union-management cooperation.

Wages and Hours: These are the central issues around which most of collective bargaining revolves. Issues like vacation with pay and health, welfare, and pension funds can be considered part of the wage picture. After all, they are indirect wages. Many large-scale employers have in the past refused to discuss vacation and health, welfare, and pension plans on the grounds that they were not proper subjects for collective bargaining. The recent Supreme Court decision sustaining the National Labor Relations Board order to Inland Steel to negotiate on these issues has settled this question.

Management's criterion for negotiating wage scales with the union varies with the prosperity of the business. If business is good, employers will think in terms of keying wages to the cost of living. In good times, managements consider ability to pay as not a proper criterion for wage adjustments and

the books of the company are "management's business." When conditions begin to get bad, the union is invited to look at the books to prove that the company cannot afford an increase. For these reasons no union will key its wage demands to any single criterion, whether it is cost of living, productivity, or the earning power of the company. Each of these factors plays its part in formulating the union's final position. If this leaves management at sea, they should feel no more uncomfortable in this position than they are when they do not know the final price at which they will have to dispose of their product. Uncertainty is part of the risk picture of private enterprise. The assumption here is, of course, that collective bargaining is being confined to the employer-employee relationship, that it embraces no ambitious program of union-management cooperation.

In negotiating, the first thing an employer always wants to know is what are the wages being paid by his competitors. He does not want to pay more. He would like to pay less. He wants "a special bargain." It is for this reason that the union may uphold regional industry-wide collective bargaining. If management objects to this procedure, it is hardly in a position to complain that the union refuses to bargain when it presents a wage scale and says it will take more but not less. Management should make up its mind as to whether it wants to participate in industry-wide collective bargaining or be compelled to conform to the pattern set by the industry leader. It cannot have both.

While most managements do agree that wages are a subject for collective bargaining, somehow they have attempted to claim that *the amount of work which is expected from a group of workers* is not a subject for collective bargaining. This has been a source of conflict between big business and labor rather than between little business and labor. Management has always attempted to keep for itself the definition of a fair day's work and unilaterally to determine production standards. Fortunately, in most cases, the managers of small plants are much closer to their operations than those of big business, and they take a truly realistic view of the matter. Today the techniques of industrial engineering, such as job evaluation, time and motion study, and the design and administration of wage-incentive-payment plans, are being converted into tools of, rather than substitutes for, collective bargaining.

The Principle of Importance of Seniority: This principle arises during periods of industrial contraction. The union has to take an adamant position, particularly when it comes to layoffs. This is easily understood when note is made of the great difficulty that a man over forty encounters in seeking new industrial employment. Where the actual life of the business is at stake, the union may relax its seniority rules, but short of such critical considera-

tion, the seniority clause is one of the cornerstones around which the union is built. Some unions have attempted to circumvent this seniority question by dividing up work. However, this solution is confined to those few industries where the basic technology makes this solution feasible. Moreover, the new rules promulgated for unemployment-insurance collections make many of these dividing-the-work techniques obsolete. Instead, they too often become share-the-poverty devices.

The Development of Working Rules: These set up a code of administrative law to govern the various problems arising from the technological changes in American industry. No union today opposes technological change in principle. They do, however, attempt to use working rules to safeguard the worker against being victimized by many of these changes. When an engineer attempts to evaluate the cost of improving a technical operation, he uses a number of rules of engineering economy to evaluate the comparative merits of the old and the improved processes. The trade union wants to be sure that the engineer includes the social cost caused by displacement of the worker or dilution of his skill as one of the legitimate expenses of a new installation. Thus, when pressing machines were first introduced into the garment industry, the number of pressers the employer had to maintain exceeded the number absolutely necessary to run the machine. This practice was continued until the normal labor turnover made it no longer necessary. Other working rules will protect craft jurisdictions by forbidding workers to perform work outside their classification. Sometimes these working rules are developed cooperatively with employers to protect codes of fair-trade practices.

Grievance Procedures: These generally do not need elaborate development in small enterprises. Big business usually has to set up involved grievance procedures because communication is so difficult a problem. One of the advantages enjoyed by little business is that a good deal of this grievance machinery can be maintained on an informal basis. The important fact to remember about grievances is that they should receive prompt attention and a rational terminal point in arbitration or some other mutually satisfactory device. It might be wise to point out, too, that the advice of many industrial-relations experts may cause more problems than it can solve. Their unnatural emphasis on the "facts" behind the grievance may be nowhere near so important as the evidence given that something else is causing severe emotional strain. That is, the grievance may be only symptomatic of a disturbance much more basic than the actual facts involved. Under the circumstances, an employer may dismiss a grievance as nonsense, only to find himself with a serious situation later on.

SUMMATION ON HOW TO GET ALONG WITH THE UNION

Quite obviously it has been barely possible to touch on many of the points that arise between management and the union in the administration and negotiation of collective agreements. But there are some of great importance:

The basic technique in getting along with the union is to *allay the union's suspicion* that the employer is awaiting the opportune time to rid his plant of the union.

The attitude that management takes toward union security is considered a critical indicator; another is *whether the company really wants to bargain* or wants to get into long, involved, abstract discussions about management rights and prerogatives.

When an employer asks, what is it that the workers want to know from him, the answer quite obviously is: anything and everything which affects their present and prospective pay and working conditions.

CHAPTER 12

HOW TO BUY BEST FACILITIES AND MATERIALS

BY

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IMPORTANCE OF BUYING RIGHT

The term "buying right" is sometimes loosely interpreted as *buying at the lowest price*. A little thought, however, will show the fallacy of this. It is generally conceded that *quality, service, and price* are of importance in the order named, but *the true meaning of quality is not always understood*. The nature of the term is a great variable. It is often thought to be one or more of such conditions as strength, good workmanship, high polish, or beauty. It may be one of these, but this depends on the use to which it is to be put. Good growing soil is of the utmost importance for a farm but usually has no relation to the choice of a *factory site*. Beauty in a *factory building* may have a high advertising value, though in the average small plant it is small or almost negligible and in many of no worth at all. A *tool* may be of fine workmanship, extra strong material, chromium-plated, but not worth the higher price that these factors bring. A *machine* may be so built that it runs silently, is so proportioned that it pleases the eye, is well painted, etc., and yet may not do what is expected of it any better than a rough and cheaper one. *Raw materials* may have more purity than others that will result in just as good a product. Materials are like persons in that their quality should be measured by what they do rather than what they look like. On the other hand it is false economy to buy land, buildings, machinery, or anything for the factory because the price in dollars is low. It is of the highest importance to foresee how it will perform and how much it will affect the operating economy.

¹ The author was for many years a member and director of the National Association of Purchasing Agents, was assistant engineer of motive power of the Pennsylvania Railroad, director of purchases of the Dairymen's League Cooperative Association, and is now head of his own company.

PURCHASING

Purchasing has become recognized as a management activity and as a profession of importance as great as any of the other divisions of management, and a person performing this function, whether called purchasing agent, as he would be in a large company, or by some other title, as he would most likely be known in a small company, must have knowledge of all the activities of the plant down to the smallest details and be able to recognize quality in its truest sense in everything he buys.

There are associations to help engineers in perfecting themselves in their field, also for men and women specializing in any line. *The National Association of Purchasing Agents*, having local chapters throughout the United States and Canada, is of great value to its members and consequently to the companies that employ them.

When establishing a small plant, the necessity of observing caution can be just as important as for a large company, in fact perhaps even more, for the small plant is more limited in its field and usually less secure in its financial structure. It cannot expect to have a large force of highly trained men to decide all the questions accurately and quickly, and with it a quick decision is often or, we may say, usually the wrong one. Such a decision can bring about an unfavorable competitive position that may prevent future profits or, as frequently happens, cause bankruptcy.

In the first part of this chapter, therefore, an attempt is made to point out the best way to obtain all such facilities, mainly when a new plant is to be started but also when adding new products to the output of an existing one or when it is obviously time to modernize an old plant. The considerable sums of capital to be spent on facilities such as land, buildings, and machinery will represent fixed assets and must be written off by continuing charges of depreciation and interest, which add to the cost of production and must be recovered in the sales price of the product manufactured. It can, of course, be readily seen how this cost may be greater than that of a competitor and prevent the volume sales necessary to make expenses, or make it necessary to sell on a margin too small for reasonable profits, thereby causing business failure. The decision as to the amount of capital necessary to acquire all that is needed depends largely on a consideration of all this, but its careful study is too often neglected or entirely overlooked in the enthusiasm of starting a new venture.

After it has been decided what products are to be made and what parts, if any, are to be purchased from others, *the first consideration is to form a definite program for buying all that has to be and can be bought for the time being and what might be bought later.* A complete list of all items

should be prepared, carefully studied, and revised to include everything that is essential to the operation. One tentative decision must be weighed against others, bringing out all the advantages and disadvantages of each.

CONSIDERING PROPERTIES

One item under buying consideration naturally comes first, namely, buildings and grounds.

Choosing the location may be very difficult and must be given corresponding care. It should be made an important part of the planning process.² Unfortunately, sentiment sometimes is allowed to supersede judgment such as "sticking to the home town," or depending too much on the advice of a "realtor" who is bound to be prejudiced and may not know much about the proposed business, regardless of how much it is explained to him. Inducements are sometimes offered by towns such as certain free services, special tax rates through the chamber of commerce, board of trade, or corresponding bodies.

Caution should be exercised when giving consideration to these offers to be sure they do not overshadow disadvantages or virtues of other locations being studied. One of the factors often overlooked and sometimes of high importance is the possibility of an unfriendly public attitude toward the type of business that it is contemplated to bring into the vicinity. This rarely appears on the surface at first, and it is very difficult to learn or plan how to meet such an attitude. Some small companies have finally had to move, after establishment, at great expense. The local chamber of commerce should certainly be consulted, if possible, before making the final decision with regard to location.

Where and How to Buy the Plant Site

Choosing the actual site for a new plant *must be done with serious thought to every item of interest in the undertaking*. What facilities are there or can readily be arranged? Is there satisfactory railroad service, such as available siding and proper *shipping facilities*? This at once raises the question as to the proper plan for dispatching the product of the plant. If it is shipped in small, easily transported lots, handling in motor trucks might be best. If bulky carload lots prevail, a railroad site is a necessity. *Trucking* to a freight station and transshipping may be expensive. If the goods indicate trucking, are there regular lines operating? Or can they be provided, perhaps by combining with other shippers that need such facilities? With large,

² See Chap. 5, "Top-management Planning for the Small Plant," p. 100ff., and Chap. 3, "Community Progress Created by Small Plants," p. 29ff.

bulky shipments even a *water route* might be considered, although this is not often a criterion with a small plant.

The *labor supply* is always important. Is there a good supply of the kind of labor that will be needed for the kind of plant contemplated, considering the fact that many workmen drive to work in their own cars or use bus lines? Is the available labor population stable, or is there a migratory trend? Do a large percentage of them own their own homes? What is the experience of *other manufacturers* in the neighborhood? It is sometimes not wise to put a new company in a position of close competition, in this respect, with existing companies. What *kind of labor* is needed for the undertaking? If the plant needs a high percentage of skilled men or women, the location should be chosen where such skills predominate. If it requires only a small percentage of skilled work and common labor can fill most of the needs or can be readily trained to a point of efficiency, the choice of plant site may be different.

For instance, a jobbing machine shop's primary requisite would very likely be a *place near many plants, garages, or other customers* that would need that kind of service. Because the work is usually for repairs or temporary substitutions that call for quick action, with price of less importance, there is a strong tendency to go to the nearest shop for this service. Skilled machinists, machine operators, molders, patternmakers, and others are not always available, and a strong consideration might direct the choice toward a community or district where such labor can be obtained.

For a jobbing shop, it is fortunate that the location which offers the greatest possibilities in business for the plant is very apt to have a good supply of machinists and the other skilled men required. This is also true of some other industries, and it is further true that the more manufacturing companies that come to a town the better the chance becomes of obtaining what is desired in labor. It must be borne in mind, however, that this attraction of labor to the towns where labor is in demand also tends toward a *labor classification*, and it is well to decide whether or not the plant under consideration will need the kind of labor available. For instance, New England for a hundred years or more has attracted textile workers, though in the last decade or two this industry has been moving to the South and other parts of the country. If a new plant would use advantageously that kind of *abandoned help* and was ready to start at the time of removal of plants to some other place, it would find a splendid labor supply. As a matter of fact this is one of the circumstances which cause the flow of labor from one place to another.

It can readily be seen that if an industry, long established in one geographical location, should move to another, it would leave behind hundreds or thousands of persons skilled in the work of such industry. Most of these

own their homes and are not willing to follow the industry to another locality. They naturally try to get work in those plants which give indications of remaining. This, of course, creates strong competition for such jobs as there are.

It is also advisable to know something about the *local political situation, town ordinances, and regulations. Local customs*, though not often objectionable, may have a bearing. We are reminded of a case some years ago, in which an American contractor undertook to build a large manufacturing plant in England. The workmen were hired locally, and there were hundreds of them. On the first working day the superintendent, to his amazement, saw them all stop work at four o'clock in the afternoon, gather in groups, and begin building fires. He soon realized that, to these men, it was teatime, and there was nothing he could do but watch them take 30 or 40 minutes out of work on a rush job with a time penalty on it. He solved the problem by putting a number of stoves around and assigning a few men to see that they were hot at the right time and that water was on hand. The time lost was cut from something over 30 minutes to about 5.

In these times, *entertainment* for the men is becoming important. If there is no convenient motion-picture house, there is danger of men drifting off to a neighboring town, and having gone to that trouble, they may make a night of it and turn up late in the morning. Even *health conditions* may be a problem. Some towns have a larger percentage of sickness due, in most cases, to poor sanitary conditions.

For some types of manufacturing a good and perhaps large *water-supply site* is essential. If water enters into the product to a considerable extent, the quantity, purity, or mineral content of it may be very important. There was, a few years ago, a plant making paper cartons used largely for food products. Thousands of dollars were lost by this company because the stream from which they obtained the water began giving a bad odor to the paper, although it had not done so before. The plant site had become bad.

A small chemical plant needing considerable quantities of water must be sure it is available on its site without undue cost for drilling wells, piping, pumping, buying from the local water supply, etc. The *quality of the water* then may be of paramount importance.

Is *power available* in the quantity that will be needed? Will it be economical for the company to generate its own power? How is the residential section situated? And is there danger that noise, smoke, or fumes from the plant may be objectionable?

A small company was once formed to process a certain mineral. The plant was to be located where a proved deposit was known to exist. It was a substance in fair demand, and the land was acquired. The location was more than a mile from the railroad, and the product would be bulky. At

that time motor trucks had not become as economical as they are today, and the company planned to carry the product in buckets on an overhead cableway to the railroad, which was a common method at the time. They failed to get a right of way over a main highway, and the cost of a dirt road, over which the trucks would have to travel, together with the difficulties and expense of establishing carloading facilities, indicated that it would be impossible to compete with other companies. The project was abandoned.

Years later, World War I brought about higher prices for this mineral product. Trucking costs per ton-mile became lower through improvement of motors and especially through improved roads. Another group of men established the plant, and it was very successful. The year selected for the first venture and the overlooking of one particular wrecked the first company before it started, but the subsequent company made profits.

It is possible to select a site that has a very good prospect for *appreciation in value*, but this should be a minor consideration unless there are definite reasons to move in a short time.

Some Practical Points on Property Deals

Renting: As a rule, the owner of a building expects to receive a rental sufficient to cover the taxes, repairs, depreciation, and a profit on his investment, and this will sometimes be more than the costs on a building owned by the user. Then, too, the cost of moving, which is likely to become necessary sooner or later, is apt to be very expensive. Have the building and location all the facilities needed at a satisfactory cost? If rent is higher than the estimate for operation in a new plant, will the difference be more than it costs to depreciate a new property? *For a small plant with small capital it is often cheaper to rent than build a new plant*, but with rents high or space available only in inconvenient locations, it is very often possible to raise the necessary capital to buy a plant and save materially.

In either case *all management factors must be considered carefully*, especially the engineering and operating features. A summary of the factors most commonly found to be of primary importance would be labor conditions, taxes, water supply, availability of raw materials, nearness to market, electric supply, steam supply, transportation, banking facilities, and possibly others. A table should be made of all the properties of the plant sites available, and all the characteristics should be considered, giving proper weight to each.

Bargains: Buying an existing plant is often very satisfactory if it meets all the essential requirements. At times there are real bargains, but of course, good judgment is necessary with a level-headed analysis of all the advantages and disadvantages.

Special Leases: On the whole, *building is the most satisfactory solution if the necessary capital and time are available and building costs reasonable.*

Whether buying or building, one should look as far ahead as possible, and that is especially true if one establishes a plant that is expected to give work and provide income for a long time to the owner, partners, or stockholders and heirs. In buying land and buildings, to be successful, one must consider the cost in connection with interest and depreciation.

When it comes to building a new plant, it is obvious that *the ground on which to build is the first consideration.* The location, presumably, has been chosen. The main thought, naturally, is to *buy enough ground* to take care of the proposed buildings and future ones as far as can be foreseen. There is, however, another possibility that is worth considering and might be good under some circumstances. *Ground can sometimes be leased for 10, 20, 50, or 100 years.* Some buildings in large cities are on property leased for 100 years.

Some factories are on *ground leased from railroads* and have been for 30 years. It sometimes occurs that everything in a certain locality looks favorable for the location and building of the plant except ground. But the railroad has a strip adjoining its tracks that would be sufficient, and a siding could easily be arranged. The railroad will not sell, but if it can see an annual income from a piece of property that, at present, is only an expense for taxes, and receive freight from it, *a railroad will be glad to consider even a small rental.* In fact, if it can foresee a substantial volume of business, the price may be very low indeed. The same idea will sometimes be possible with property owned by a *town* that would like to encourage new industries.

The kind of *building to erect on leased land depends on the length of the lease* and the desirability of the location from the viewpoint of the lessor. If there is any doubt as to the permanency of the lease, the buildings erected will necessarily be much less expensive than when erected on owned property and may sometimes be almost flimsy.

How to Appraise the Real Cost Value of Rent

The costs of building or renting vary so widely in different sections of the country for different kinds of industry, etc., that no figures can be given here except rough ones for illustration. If we assume that the equipment must be supplied by the proposed operating company, as will be usual, a building for the purpose might be built for \$30,000. The ground may cost \$1,000. If we depreciate both on a 20-year basis, the cost per year would be \$1,550. We shall assume taxes to be \$800, giving a total of \$2,350.

The annual rent on equal facilities would, if we assume it to be one-tenth

of the value, which is usual, be \$3,100. The comparison shows in favor of building and apparent saving of \$750. But the cost of upkeep or the question of permanency of the project might make this a very minor consideration. It must be understood that these figures are only for illustration, and a thorough study would show which plan would be the more practical.

In quite a few instances it should be advisable, especially for the small plant, to take advantage of an arrangement which is known as "rental with option to buy." Under it the premises are merely rented for a time and the manager has the opportunity actually to try out the location and plant arrangements before he makes use of the option to buy whereby he then becomes the owner of a plant, which he knows will serve his needs.

The question of whether to build a plant or rent space must be decided by comparing *all* the costs and conditions.

BUYING, ADAPTING, AND MAKING MACHINES AND FACILITIES

Whether to start a plant with used, homemade, or new machinery also depends largely on the capital available. Most kinds of machines are in the market at all times, except during a war or other times of tremendous demand; normally, there always is a great supply of good used machinery of the sort commonly used. There are lots of special machines, too, but not so numerous as the regular run of machine-shop equipment, such as presses, lathes, millers, shapers, and boring mills, small and large.

It is possible easily to find machinery suitable for a jobbing shop doing either light or heavy work or even large machine tools suitable for a locomotive shop. *Selection must be made carefully and by one who is thoroughly posted on what is needed.* A man used to the kind needed can readily see if a machine offered is suitable, but one with only a general knowledge of machines and not conversant with the fine details is in danger of selecting a machine with a special rig or mechanism unsuited to the work contemplated or badly worn.

As a general rule, it is best to buy new and up-to-date machinery. The saving in operating costs, including depreciation, will usually show the advantage. Other equipment such as vats, benches, jigs, flasks, molds, and furnaces may be *homemade to effect a worth-while saving.* The time element and the ingenuity of the available help are big factors. Some facilities of this nature cannot be bought to suit the operation, and some machinery for light work can be made very satisfactorily by a bright mechanic at a very much lower cost than buying. The field is too wide to attempt to cover it completely, but examples of machines that have been homemade and put into regular use are multiple drilling heads, light power-driven tools for

assembling small parts, power clamps, hoists, conveyors, gluing rigs, and spray-painting setups.

What to Beware of in Machine Buying

The kind of machinery to be bought is well indicated by the *product* to be made, but it should be borne in mind that most plants will take on *new production items* from time to time, and much thought must be given to this possibility and to the likelihood of *redesigning* the product to fit a *changing market*, to meet competition, and especially to lower cost of production. It may be foreseen that changing conditions of these sorts will likely call for either heavier machines or lighter and faster ones. Often these possibilities are overlooked, and machinery is bought to do only the work seen at the time of purchase. *Heavier or more complicated machines* than are needed are sometimes acquired at a sacrifice of speed.

Also, when the purchase is made to replace a machine that has been in use for some time and the shortcomings of which are well known, the fascination of a *larger machine* and the number of processes for which it can be used—even if it is realized that many of these probably will never be required—sometimes overrules better judgment, with a consequent enlarging of overhead uselessly. At the other extreme, a small plant is apt to *keep old machinery* long after it is outmoded without seeing the time loss and consequent money loss. There are also cases of *machines being discarded* while still in an economical condition because they have reached the age previously set for obsolescence.

No machine ever wears out so that it cannot be repaired by welding, replacing parts, etc. It should be *replaced for wear and tear when the foreseen repair will be too costly* or when it has a resale value which makes it worth while to discard it for a new one. Some firms replace each machine after only 3 or 4 years' use, and in this way they avoid almost entirely the cost of repairs and also reduce the possibility of breakdowns. This keeps the plant equipped with the very latest machines and tends to get the best machine speed for production at all times. It is, however, a practice too costly for most plants unless there is a ready demand for the discarded equipment and consequently a high resale price is obtainable.

Some Practical Points on Machine Buying

Deciding when to buy equipment or what to buy should *never be left to one man*, even if he is the sole owner. The controlling owner should be the first to see this. There are always employees in a plant with worth-while ideas, though it is hard to bring them out. The *manager should develop*

in his men enough interest and judgment to enable them to know some details about the equipment that he cannot himself be expected to have, and discussions are necessary to find out what would be best. This need not mean calling a number of hands into the office and a stoppage of work. Discussions are best held at the old machine while it is producing. A few words while the operation can be observed are worth hours in the office. If the company has *a mechanical engineer, a purchasing agent, a production superintendent*, or anyone functioning as one or all of these, they or he should be consulted and the recommendations of anyone should be overruled only after every consideration has been given. A small company just starting is not apt to have employees fitted for many functions of this sort, but there are engineering firms and other sources that can be called in for advice.

What to Expect as to Price

Prices asked for machinery vary over a wide range. The *name* of a manufacturer who is well known for quality products is reasonable assurance of satisfaction and a safeguard for the buyer who is not sure of his knowledge; but usually it also *means a higher price* than would be paid for a less known make which would be just as satisfactory in the use to which it is to be put. The remedy is to consult employees freely and get advice from others.

Dealing with the maker of the equipment is the most satisfactory method from the viewpoint of guarantee and help in getting in proper operation in the shortest time, but discounts can sometimes be had from *dealers* that cannot be had from the maker. Many items of this nature have prices well fixed, but many price concessions also can be obtained by bargaining. It sometimes happens that a manufacturer will sell at a very low price to introduce a new model into a certain locality, especially if his competition is keen.

Buying Hand Tools

Much money can be wasted in buying hand tools, though this is not evident to the average person to its fullest extent. In many types of operations the suitability of the tools is almost, if not quite, as important as the machinery. *A man provided with the wrong tools will waste hours, day after day, adding steadily in unnoticed increments to the cost of the product.* Hand tools must be good but not fancy, of the right durability to suit the job, not better than needed, but certainly not too poor. Some "cheap" tools, for some work, will give just as good results as the best. In many circumstances, however, a "cheap" tool can be very expensive. On some kinds of work the *tool that "fits"* the workman who will use it is the best buy.

Hand tools that are commercial standards are subject to *trade discounts*. A carpenter can obtain these for the tools of his trade, and so can men of other trades for the tools that they use. A manufacturing company can get discounts which sometimes equal those to the "trade," sometimes even better, and sometimes none. The buyers for a small company can often get discounts ranging from 10 to 30 per cent. The practice is, of course, based on the expectation of more future business than would be obtained from an incidental buyer of tools. The buyer for a *small company can often get best discounts* by indicating the probable amount of business his firm will offer in a year, or sometimes the dealer can guess by the nature of the firm that it will use large quantities, even when no figures are mentioned.

If the company intends to use the tools as accessories for its products or in a special tool kit or toolbox, also a special discount may be negotiated, but usually it will be less than the "trade discount." Dealers look on this in different ways, and if the volume of tools to be bought is sufficient to justify the time spent, *it pays to "shop around."* The discount obtained on the first few purchases from any dealer is apt to be the regular one for the future. Even if the need for such items increases, it is sometimes hard to get better discounts unless the dealer thinks he may lose his customer to a rival.

Prompt Repair and Servicing Important Points in Buying Machines and Tools

Since in many small plants special work is often performed with special machines and tools, the kind of servicing which is provided by the manufacturer or is obtainable through the dealer is an important point not to be overlooked in buying such items. Also in reference to transportation equipment which is used, quick repair or service is essential.

Provisions to take care of breakdowns in regular standard machines should be made by buying spare parts and training someone to make simple repairs. But for the more complicated repairs the service of the manufacturer or dealer must be relied upon, and then the kind of service, its promptness and cost become important.

Quick, good, and reasonably priced repair and other services are possibly as important points to be thought of as are prices, discounts, and similar considerations. Often enough a "good-name" manufacturer asks high service charges or his dealer is slow in rendering service because there are so many calls that the small plant is made to wait. Most manufacturers or dealers, however, make every effort to render excellent and quick service at reasonable costs.

In any case it should be good practice to consider also, when buying, the repair and service facilities that are available. Great differences prevail in

different localities in reference to the various makes. If this is overlooked, the resulting higher costs and delays increase the cost of production and may cause repeated difficulties and delays in deliveries.

Office work should be at a minimum in a small plant, but for this very reason the office machines and such special equipment as are needed should be obtained with the same considerations for repair and service.

How to Get Gauges, Jigs, Special Fixtures

Gauges can be bought in great variety, but many simple ones that can be made in the plant will give just as much satisfaction as the more expensive ones, and there are cases for which there are no satisfactory ones on the market. For instance, gauges can be made of ordinary angle iron for small shears, brakes, drill presses, saws, etc. The number of conditions covered by these and the satisfactory performance depend very often on the ability of some particular employee.

Jigs are usually special drilling or tool-guiding devices suited for special operations, and those for one plant will rarely suit another. They are of necessity "tailor made." There are special shops that will make them, but then they are likely to be *very expensive in money paid and in the time consumed* by one or more employees in conveying the right idea to the jig maker, checking them, correcting, and fitting them. Jigs are less costly when homemade. When making tools, gauges, or jigs, the cost of labor and material must be watched to be sure it pays. This is often overlooked, and they become more expensive than the saving in work warrants or the price for which they can be bought. The former occurs most frequently when they are made for work that is temporary or of small volume.

The use of jigs is rarely given the importance it deserves and is often overlooked entirely. The old method of scribing from templates is very expensive when applied to operations that are suitable to jigs. Of course, jigs are not worth making when the volume of an order is too small and the cost of the jigs too high. The difficulty of a small plant is often that there is *no one in the organization with sufficient ingenuity* to devise these jigs or who could make them at a low cost. This ability, even when found, often dies because there is no incentive, raise, bonus, or even commendation to keep it alive. Rewards must be granted to get these devices made.

When there is no one in the organization who shows ability of this sort, it will be found worth while to *employ a consultant*. Unfortunately, most engineers known as consultants are interested only in large operations, but there are some who will advise on small items such as those under consideration. Industrial engineers accepting such work can be found in the organization of the *manufacturers from whom machinery is being bought*,

but as a rule only if that company is urged to provide such men and it is understood that their services are to be paid.

The wastefulness of penny wisdom and pound foolishness is displayed in this consideration more often than in most. It seems to hurt to pay an outsider two or more times the money received by a regular employee, but the fact should not be overlooked that the outsider has an overhead to cover, including sales cost and unavoidable lost or unproductive time, not to mention the years of training, often expensive, that have equipped him to do something that the regular employee cannot do. If the *supplier of the machinery* cannot furnish such a man, he will, if pressed, usually know of someone whom he can recommend. Sometimes these experts can be located through the *professional societies* and often through the officers of a firm making a similar product, though one that is not competitive.

BUYING TRANSPORTATION EQUIPMENT

Transportation equipment, to be used to or from the plant or within the various sections of the plant, if poor, is not only costly, but the handling times and waiting periods between work operations slow down the work flow, and thus reduce the volume of production, which would be much greater if best transportation were provided.

Most small plants have poor transportation equipment, and this is a major factor in the control of their output. In buying transportation equipment they consider only price, but not the daily cost of delays, and when prices are fairly high, they do not buy truly best equipment.

Transportation Equipment for Outside Use: Since for most small plants, incoming as well as outgoing shipments are small in volume, they usually *let suppliers make the delivery*, and for outgoing freight they contract with trucking firms or others who call for the shipments. This kind of operating is more costly but saves the investment in equipment otherwise needed. It saves also the cost of drivers, repairs, maintenance, garaging, license fees, insurance of various kinds, and a lot of liabilities, responsibilities, and headaches.

Careful cost-of-transportation studies have proved repeatedly that small plants pay more for transportation performed by their own personnel than if they had contracted for it. Unless there is a definite necessity for doing outside freighting, *contracting and paying for such services is more advisable*.

Transportation Equipment for In-plant Use: The great possibility and need for equipment improvement lie, as far as the small plant is concerned, in the means of materials handling and transportation inside the plant.

The most commonly used equipment types are hand trucks, power trucks, simple chutes, simple mechanical movers (roller or chain conveyors), belt conveyors, monorails, assembly conveyors, or such as would feed into the assembly area. Besides, there may be hoists and cranes.

All these types of transportation equipment are available today in any form, size, shape, quality, and condition to suit the needs of any plant. They all save costs, speed up flow, and cut idle times between operations.

The common difficulties which prevent buying and installing the best transportation equipment in small plants have been so far the original costs of good equipment and the costs of installation. Both are often considered as being beyond the possibilities of the small plant, and therefore it uses slow, old, outworn, unsuited means of transportation.

It is impossible to recommend offhand the buying of any kind of transportation equipment. But it should be appropriate to recommend that *any plant manager call in an engineer from any one of the equipment concerns*, who, mostly without any charge, will be able to point out which kinds of equipment would be best, how much they would cost, and how much time and money they would possibly save.

Buying this kind of equipment involves careful study of the proper utilization and proper coordination of the new acquisitions with the available machines. If the results of these studies are favorable, purchase should be considered.

There is little opportunity to obtain used equipment, bargain prices, or special considerations from any of the reputable makers, and therefore buying from good firms is always safest because they guarantee their installations.

The main point in buying equipment of this kind is really not its price or cost but the desirability of having it. By now many small plants have mechanized their internal transportation or at least parts of it. None can be found who regrets it, and more should investigate their own conditions.

MATERIAL BUYING³

In most products the cost of material is the most important cost item. In the daily operation of a plant the buying of materials is one of the most consequential activities, and over the years considerable amounts are spent on them. In many plants, sizable portions of their capital are tied up in material inventories.

The small plant, requiring mostly relatively small quantities of material, is from the start somewhat handicapped, in so far as it has to buy without the benefit of large quantity discounts and, often enough, cannot buy direct

³ See also Chap. 18, How to Make Savings and Use Profits, p. 448ff.

from material producers but must buy from dealers and middlemen who charge considerably more than the producers.

If larger quantities are bought than will be used within a reasonable time, material stocks are piled up. This ties up funds and creates excess stock, some of which may never be used, so that obsolescence losses are caused. What was a gain in buying may be offset through inventory loss. The manager thus has to decide which he would prefer.

The main handicap of the small plant, however, does not lie in this decision but in the *lack of material planning* which prevails. Most managers do not figure out for any length of time ahead what kinds and how much of each kind of material they will need. They apply "hand-to-mouth buying." They buy only as much as they immediately need; they buy at irregular intervals from various sources of supply, mostly from dealers. They wait until the last minute with their buying and, naturally, must pay more for their material. The large companies all buy more at one time, buy from well-chosen sources, and buy under contracts—all of which is called "contract buying." Obviously they get better prices, better deliveries, and better conditions.

"Buying at the lowest price" may be as risky as "buying for speculation," but not if the buyer knows precisely what is needed and has the means of checking the quality before accepting delivery. He may, in fact, save very substantial sums by getting the lowest price available in the market.

Two very simple and good rules for the small plant to follow in its buying can be stated as follows:

1. *Make contracts* where possible and where the market indicates the advantage, but be very careful of any terms, written or verbal. Have a clear understanding of those terms. The advantage of contract buying is especially evident in obtaining raw materials that go into the product.
2. *Keep material inventories at the most economical level:* not high enough to endanger waste by obsolescence, spoilage, or tied-up capital; not so low that there is danger of running out and causing operating losses.

The Achieving of Contract Buying

The small plant manager who *plans* for a few months ahead can discern the materials he is *sure to need*, and consequently he knows those for which it would be best to *contract*.

There will be other materials the need for which will be *uncertain*, and they will, naturally, have to be *bought from hand to mouth*.

The quantities needed should be estimated at least for 3 months ahead

and preferably 6 months or a year ahead, which will give the basis on which a number of suitable suppliers can be approached. When one or more suppliers have been selected, a full understanding can be had as to deliveries, prices, price flexibility, payment conditions, etc.

In times of material shortages, some suppliers will not deal with small plants on a contract basis. But increasing competition and return of more normal conditions are bound to strengthen the opportunities of the small plant.

The best contracts are those which are not iron-clad obligations but provide at least reasonable flexibility as to changes in prices, weekly quantities to be delivered, and other conditions which may need adjustments.

The lower price which can be asked for contract quantities is justified by the fact that the supplier, be he a dealer or manufacturer, can make his arrangements with *his* suppliers on a firmer and possibly contract basis, so that he is strengthened in his own activities as are all those supplying him.

If contract deliveries are properly arranged, the need for material stocking is reduced and inventories can be lower.

How Much Material to Keep in Stock

Large companies use *formulae* for figuring minimum and maximum stocks for the most economical inventory turnover, best control, and economic lot sizes to buy. The small plant manager can follow a similar procedure, though somewhat simplified. As long as he continues to buy from hand to mouth, he needs a larger inventory and has to pay the highest prices for what he buys.

As soon as he plans and aims to buy at least some of his materials under contract, he can obtain lower prices and keep a reasonably low material stock at the same time while ensuring production to a larger extent.

Material obsolescence is common in all plants. It is costly as well as undesirable, in so far as it not only causes write-down losses but requires floor space, handling, and final disposal at almost zero value.

Main material lines should be kept in stock only in such quantities as economical delivered prices indicate and production needs require. It is not the inventory turnover which decides this, but the kind of arrangement which the purchasing contract provides with the supplier.

Supplies should be kept on hand and delivered with regularity to cover reasonable needs and in such quantities as can be purchased at best economy. Few small plants buy supplies in large quantities.

Fuels (Coal, Oil): Keeping a plentiful supply of these on hand is not the final answer. Having sufficient is important, having too much is wasteful,

and buying the right kind is of more importance than is usually thought. If the quantity consumed is large, considerable saving can be made in the buying.

Services: The purchase of electricity, gas, steam, or refrigeration requires intelligent handling, although the rates are nominally fixed. There are sometimes opportunities for price allowances.

Raw Materials, Finished Parts, Subassemblies, etc.: Such material of this nature as is bought from others should always be purchased on contract and be kept in stock in only such quantities as delivery conditions require.

SUMMATION ON PURCHASING

Obviously each small plant manager can and should use his own system and techniques of buying. Those who think it smart to outsmart suppliers or dealers will be likely to lose by it in the end. Those who think they are at the mercy of suppliers and that the effort to overcome this is not worth while will find on the other hand that suppliers recognize that the best long-range policy is to cooperate.

Supply and demand will always be the foundation of a price structure. Competitive bidding is healthy unless it is of a cutthroat nature, and then it will not last long.

Prices may go up, but they are also bound to come down.

Purchasing, properly understood and applied, will take cognizance of the conditions that prevail, but even the smallest plant manager has his rights, and he should aim to

1. Create truly intelligent, *stable and honest relationships* in all buying.
2. Buy only in such quantities as can be reasonably expected to be needed.
3. *Buy on contracts*, instead of haphazardly or for speculation.
4. Avoid too large or too small inventories, but *keep a safe minimum stock*.
5. *Insist* on being given a best price, deliveries as needed, and conditions that are fair to buyer and supplier alike.

Buyers' market, sellers' market, rising market, shrinking market, all these are well-known conditions, but what is needed most and gradually must be created is a *stable market* in which even the smallest plant can buy enough and so low that its products can find the greatest number of buyers.

CHAPTER 13

HOW TO OBTAIN BEST PRODUCTIVITY

BY

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THE PRODUCTIVITY PROBLEM IN THE SMALL PLANT

Two days after I accepted the preparation of this chapter, my entire plant was destroyed by fire. Suddenly we had no productivity at all. It took nearly 4 months to get all the insurance problems and adjustments out of the way and another 3 months to rebuild our steel-fabricating shop and machine shop. Much more had to be done before we could operate again with any degree of productivity.

This incident shows only one of the crucial elements that interfere with productivity in the small plant more often than in the large factory. *Force majeure*, acts of God, or unavoidable detriments take their toll in form of major or minor disasters such as fire, floods, explosions, serious breakdowns, and similar events. Wise and fortunate are those managers who in good days are providing for disaster days and for those drab and nonproductive long periods which follow them. Precaution and even great watchfulness sometimes go for naught, and INSURANCE is after all not only a most desirable provision for survival, but disaster can become and can be made through foresight the starting point for better operating and more intensive or possibly best productivity. This is the kind of productivity we shall aim for from now on in our shops and plant.

In good days and in most plants, *especially in small enterprises, productivity is possibly one of the least thought of and least aimed at objectives of managers. All too many are satisfied with only a certain gait in their operations.* Once established, it is accepted by management and by the men as

¹ The C. I. Capps Company produces "Dependable" Gray Iron, Brass, and Aluminum Castings and has machine and pattern shops. The author is the chairman of the Florida Section of the ASME.

possibly the best they can do. They continue at the same pace week after week and keep it up until disaster, competition, union trouble, economic developments, high taxes, increases in costs, declining prices, losses, or lack of profits cause a most serious awakening to the fact that *more attention to productivity might have been in order* and would have created quite different conditions.

LOW PRODUCTIVITY AND ITS CAUSES IN SMALL PLANTS

It is safe to say that not more than 20 per cent of all small plants operate actually at near best or 100 per cent productivity. Probably 40 per cent of all small shops work only at 60 to 70 per cent of efficiency, and the remaining 40 per cent of all small establishments achieve only half or less of the perfection which they could achieve with the same number of men and the same facilities and machines.

The lack of productivity is not caused by any inherent disadvantage or weakness, which by necessity would have to arise in small plants. *The low degrees of performance are caused by poor management, indifference on the part of the manager, lack of knowledge on how to achieve productivity, or just plain carelessness.* The causes of failure of small plants and of small enterprises in general, shown elsewhere in this study, reflect and show all weaknesses commonly found in a truly enlightening manner. They are, in their sequence of frequency, incompetence in management, scarcity and difficulty of obtaining materials, shortage of adequate labor, increased labor costs, lack of goods to supply customers, lack of capital, increased rentals, shortage of equipment and repair parts, lack of dealer organization, etc.

These causes of failure clearly indicate that lack of productivity does not occur only in production work but that productivity may also be absent in engineering work, sales work, and financial work and in any specific phase of managing any other activities. *Lack of management know-how* is definitely more general than the *lack of technical know-how*. Probably the most frequent cause of failure and low productivity is the *inability of the manager to create a good combination of technical and management know-how*, a combination which is highly desirable no matter which kind of work and activity is involved.

Since in this study the various management activities are covered in specific chapters, for instance, sales, accounting, etc., in this chapter only the achievement of productivity in technical or production work is discussed.

Before going into this subject in detail, be it said that it is never too early or too late to begin thinking seriously of *the creation of productivity*.

It is relatively easy to get work done; it is more difficult to get good work done; but to get best work done and thus best productivity especially in technical work needs a lot of know-how, interest, and effort to put the best ways of achieving it across to all members of the plant.

MEANING AND OBJECTIVES OF PRODUCTIVITY

Productivity is the degree of perfection in which the objectives of production or of services are achieved. The degree of perfection depends on the application of know-how to men, machines, and methods. It can be influenced, however, favorably or unfavorably by quite a few conditions.

Best productivity may at times aim primarily at a constantly increasing and possibly at a maximum of physical output. At other times it may aim only at the achievement of less than maximum volume, but at some maximum in quality, low costs, or time of delivery to suit specific conditions. The achievement of lower costs has been recognized as possibly the most indicative and most important criterion of productivity.

"Best productivity" is thus somewhat flexible in its meaning. At all times, however, it expresses the *best possible and reliable fulfillment of the production tasks, or unit goals, and the achievement of lower costs than prevailed so far. Better work should give lower cost. Best productivity should give lowest cost per unit made.*

Upon these objectives of productivity, the practical as well as the scientific minds who have investigated this problem are fairly well in agreement.

SCIENTIFIC DEFINITIONS AND METHODS FOR MEASURING PRODUCTIVITY

Ever since the days of *Frederick Winslow Taylor*, who was the first to measure work in terms of time, to the discussions of the *Conference on Productivity* held in Washington, D.C., on Oct. 28-29, 1946, under the auspices of the National Bureau of Economic Research, the scientific definitions and methods for measuring productivity have varied widely. Besides, the concepts of productivity have changed.

Nowadays, productivity is no longer expressed in *units of time* or in the form of *time standards*. Today most authorities use *product units made per worker*, *production value per worker*, *production units per man-hour*, *production value per man-hour*, and even the *average value of production achieved in one hour divided by the average cost of wages per hour* in order to measure productivity.

TABLE 1. TOTAL AMERICAN INDUSTRY PRODUCTIVITY IMPROVEMENT
IN MAN-HOURS PER UNIT

Manufacturing (1899 = 100)

| Year | Output | Employment | | Employment per unit | | Wage Earners | |
|------|--------|-----------------|--------|------------------------|--------|---------------|---------------------------|
| | | Wage earners | Total* | Wage earners | Total* | Man- hours | Man- hours per unit |
| 1899 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1900 | 102 | 104 | ... | 101 | ... | ... | ... |
| 1901 | 115 | 109 | ... | 94 | ... | ... | ... |
| 1902 | 129 | 118 | ... | 91 | ... | ... | ... |
| 1903 | 132 | 122 | ... | 93 | ... | 120 | 91 |
| 1904 | 124 | 115 | 116 | 92 | 94 | ... | ... |
| 1905 | 148 | 128 | ... | 87 | ... | ... | ... |
| 1906 | 159 | 134 | ... | 85 | ... | ... | ... |
| 1907 | 161 | 140 | ... | 87 | ... | 136 | 84 |
| 1908 | 133 | 124 | ... | 94 | ... | ... | ... |
| 1909 | 158 | 139 | 143 | 88 | 90 | 134 | 85 |
| 1910 | 168 | 145 | ... | 87 | ... | ... | ... |
| 1911 | 161 | 145 | ... | 90 | ... | ... | ... |
| 1912 | 185 | 151 | ... | 81 | ... | ... | ... |
| 1913 | 198 | 152 | ... | 77 | ... | ... | ... |
| 1914 | 186 | 146 | 152 | 79 | 82 | 136 | 73 |
| 1915 | 218 | 153 | ... | 70 | ... | ... | ... |
| 1916 | 259 | 179 | ... | 69 | ... | ... | ... |
| 1917 | 257 | 191 | ... | 74 | ... | ... | ... |
| 1918 | 254 | 195 | ... | 77 | ... | ... | ... |
| 1919 | 222 | 188 | 197 | 84 | 89 | 164 | 74 |
| 1920 | 242 | 188 | ... | 78 | ... | 161 | 67 |
| 1921 | 194 | 144 | 152 | 74 | 78 | 119 | 61 |
| 1922 | 249 | 160 | ... | 64 | ... | 137 | 55 |
| 1923 | 280 | 183 | 190 | 65 | 68 | 158 | 56 |
| 1924 | 266 | 170 | ... | 64 | ... | 141 | 53 |
| 1925 | 298 | 175 | 183 | 59 | 61 | 148 | 50 |
| 1926 | 316 | 179 | ... | 57 | ... | 152 | 48 |
| 1927 | 317 | 175 | 184 | 55 | 58 | 148 | 47 |
| 1928 | 332 | 175 | ... | 53 | ... | 147 | 44 |
| 1929 | 364 | 187 | 197 | 51 | 54 | 156 | 42 |
| 1930 | 311 | 162 | ... | 52 | ... | 129 | 41 |
| 1931 | 262 | 137 | ... | 52 | ... | 104 | 40 |
| 1932 | 197 | 117 | ... | 59 | ... | 82 | 41 |
| 1933 | 228 | 129 | 136 | 57 | 59 | 89 | 39 |
| 1934 | 252 | 151 | ... | 60 | ... | 95 | 38 |
| 1935 | 301 | 160 | 167 | 53 | 56 | 107 | 35 |
| 1936 | 353 | 174 | ... | 49 | ... | 124 | 35 |
| 1937 | 376 | 191 | 198 | 51 | 53 | 134 | 36 |
| 1938 | 295 | 160 | ... | 54 | ... | 104 | 35 |
| 1939 | 374 | 176 | 181 | 47 | 48 | 121 | 32 |

Source: Dr. Solomon Fabricant, *Labor Savings in American Industry*, 1899-1939, p. 46.

* Excludes nonfactory personnel, 1935-1939. The following indexes (1899 = 100) cover all personnel:

| | 1935 | 1937 | 1939 |
|--------------------------|------|------|------|
| Employment..... | 174 | 201 | 195 |
| Employment per unit..... | 58 | 54 | 52 |

The Bureau of Labor Statistics, the American Federation of Labor, the Committee for Industrial Organization, and the Department of Commerce, as well as quite a few private organizations and individuals have given careful consideration to the need of developing reliable measuring methods and to the establishing of understandable and precise productivity indexes, but so far neither full agreement nor truly reliable indexes have been established among all these authorities.

The Bureau of Labor Statistics of the U.S. Department of Labor has compiled *Man-Hours of Work* and variations thereof and has published these indexes for all manufacturing industries as well as for some industry groups. The data go back as far as 1909, and in form of *Output per Man-Hour* there is available at least one kind of index that can be widely used. These data are published in the *Survey of Current Business* (U.S. Department of Commerce), in the *Statistical Yearbooks of the United States* (U.S. Department of Commerce), and in some publications of the U.S. Department of Labor.

The New York Times has prepared more recent data on "Unit Labor Cost in Manufacturing" (going back to 1899). They were published in *The New York Times*, Aug. 26 and 27, 1948.

The National Association of Manufacturers at about the same time (August, 1948) circulated among its members a table comparing the over-all changes in *production per man-hour* with the over-all changes in *wage cost per unit of production*. It also has made a special study on productivity, given out in the winter of 1947.

Dr. Solomon Fabricant, through the National Bureau of Economic Research (New York), published *Labor Savings in American Industry, 1899-1939* in November, 1945. It is perhaps the most useful study on productivity so far and may be used by those who intend to study productivity from its scientific angle. The productivity indexes developed by Dr. Fabricant are shown.

The Bureau of Labor Statistics in its *Summary of Proceedings of Conference on Productivity*, Oct. 28, 29, 1946, brings out the fact that the basic idea of higher productivity is that of continuing the traditional American record of raising the standards of living through producing more goods at less costs. The bulletins can be had free of charge from any office of the U.S. Bureau of Labor and will interest especially those seeking a practical approach and introduction into this subject.

The major findings of the conference were presented by Samuel H. Thompson of the Department of Commerce as follows:

The country needs standards of measurement that will help increase productivity. These measures should be useful as tools to help increase the total quantity and quality of production.

More different kinds of measurements are needed in addition to those concepts of productivity which use so far only man-hours for measuring productivity. In particular, monetary measures such as payroll costs and the value of output should be considered and used in measuring.

The entire procedure of productivity measuring should be conceived to accelerate the broad social purposes of continued program toward high levels of production and employment and a rising standard of living.

The established measurements introduced and used by the economists should be reviewed and improved for greater indicativeness and usefulness.

More industrial firms should take interest in and establish records truly suitable for measuring productivity in precise terms and indexes.

The state of management efficiency should be considered in measuring productivity and not only efficiency of workers.

The rewards of increased productivity—savings in costs, time, or other forms—should not be claimed by management, labor, investors or consumers but should be distributed as fairly as possible in wages, salaries, bonuses, profits, and lower prices.

The prevailing methods of measuring productivity were considered neither as too reliable, accurate, and informative nor as adequate, and careful improvements to make them useful for and in collective bargaining as well as for other modern needs of industrial analysis were recommended.

As these conferences and findings prove, the subject of productivity is no longer being taken lightly in top-management, top-labor, and government circles in this country. Behind the search for best methods for measuring productivity lie the big problems of the rights of management to bring about higher and best productivity, the rights of labor to be protected against exploitation, and the rights of the consumer to goods at a price which his income can afford.

Productivity as a subject of research and possibly also of practical purposes has gained even further by the studies of Colin Clark,² Australian government economist, who has developed an international unit for measuring productivity which he used for measuring and comparing the national productivity of 40 countries.

As *international unit* he has chosen "the quantity of goods and services exchangeable for \$1 in the United States during 1925-1934." For all the economically advanced countries he used money national income, corrected for the wide differences in the purchasing power of the various moneys. For countries with large or predominantly peasant populations, such as the Soviet Union and India, he revalued their consumption at higher Western

² *The New York Times*, Aug. 21, 1949, pp. 1 ff. See also Colin Clark, *The Conditions of Economic Progress*. New York, The Macmillan Company, 1949.

retail prices, increasing their statistical income by an imputed income. "Measuring in this way, the United States, New Zealand, and Canada lead the world in national productivity, with Australia and Great Britain just behind them."

While no attempt is made to present or appraise Clark's method in detail, the interesting fact remains that he considered economic progress and national productivity as measurable by a country's output of goods and services related to the labor time expended by its labor force. He uses the physical quantity of goods produced and obtainable for \$1, which means the price to consumers, as a basis to see which degree of productivity has been achieved. This consideration of price and costs to the buyers really means that productivity is increasing only if *all* the people, not only the workers, can actually get more physical goods for the same amount of money, a criterion well worth remembering in all aspects of discussing or creating productivity, management-labor relations, wages, and similar subjects.

NEED FOR PRODUCTIVITY IN THE SMALL PLANT

While in the small plant there probably is less interest in the scientific definitions and methods for determining productivity, there is nonetheless a definite practical need for achieving and creating good and possibly best productivity.

The need for best productivity not only arises from the generally low level of productivity that prevails but becomes a necessity when the small producer, pressed between high costs of production and declining prices caused by competition and shrinking markets, simply must aim to operate more efficiently if he desires to remain in business.

The small producer can exercise pressure on neither suppliers nor buyers. He cannot plead much with the union, if he has one, because most wage rates are not set for any one shop alone but for all shops or work classifications within an industry or area, and as a rule they have to be observed by large companies and small organizations alike. But even if there is no union, wage chiseling is no method of creating productivity.

Nor can the small plant readily obtain operating loans under adverse conditions, to create better operating conditions or more productivity through better equipment or other forms of investment. The new financial burden would only increase the difficulties of the plant.

Reliance on the good will of good friends does not really create best productivity, nor can a friendly employee-management relationship alone achieve truly best operating.

No matter how he may try, the task of creating best productivity in the small plant rests upon the manager and depends upon his knowledge as well as his initiative. In good times and even more so in difficult times, it is one of his special know-how tasks, and at all times there is a definite need to obtain best productivity if the small plant is to prosper.

HOW TO OBTAIN BEST PRODUCTIVITY

There is no one method or procedure which could be applied in every plant, at all times, or under all conditions in order to create best productivity. It does seem, however, that there is a basic pattern of approach and also various methods that do create productivity. By choosing the best suited ones the achievement of better and possibly best productivity can be expected.

In general it needs

1. Planning and goal setting in order to create clear objectives for the productivity desired
2. Study and appraisal of the known methods creating more and better work performance
3. Selection and application of the method or methods best suited for the conditions of the plant
4. Intelligent supervision of the applied methods to achieve the intended best productivity.

The efforts at best productivity must be molded intelligently into the daily work patterns. The best methods must become daily practice, and supervision must bring about improvement in gradual stages by patient education and gradual application rather than by ruthless "installation" and "enforcement."

Any worker and even the most cooperative employee group resent obvious attempts to get more out of them than they have given so far. Unions are definitely against such tactics and reply with defense measures that can stifle even the most determined management.

Seeing it from the practical management angle:

The achievement of best productivity is a matter of give and take and above all fair dealing with all concerned. It is and must be fair to all. In particular it needs best engineering and best management in order to achieve it.

In the following there are presented those measures and methods which so far have been applied, are recognized as fair even by unions, and can be used in small plant management.

Planning and Goal Setting the Premise for Productivity

In our plant we do various kinds of work. Some we do as job orders, requiring only one operation to be performed. This gives us approximately 5 per cent of our business. About 10 per cent of our business may still be only one item but may require many operations, such as drafting, pattern-making, foundry, and machining. Another 30 per cent of our business is rough castings. Steel fabrication accounts for roughly 10 per cent more. In the remainder we have fairly sizable orders that require production runs in related units and operations over a few days to possibly months.

When a purchase order is received from a customer, we give it a preliminary planning to determine through which departments it must be routed. The job-order sheets are then typed and sent to the production-planning section where all detailed planning and scheduling is done. This includes making up material lists for purchasing material, operation planning, methods planning, determining job-lot sizes, and fitting into department and machine schedules.

On our unit orders, which are usually rush, the above is omitted and the job is taken up directly with the individual foreman, which saves paper work, time, and expense. It is, however, scheduled as will be described later.

In order to get productivity, we bring these orders into *as logical a program of production* as we possibly can. We schedule them carefully, allowing for good work times as well as emergencies, and thus feel that, by having a *truly good production program and a truly good production calendar (schedule)*, we have created the necessary basis which must be established before any of the methods can be applied which would give best productivity.

After all the above has been decided upon, the program and schedule are transferred to a visual production board. (We use Wassell Produc-Trol boards.) These are set up by department, operation, partial completion date, completion date, material availability date, and other pertinent information.

Even a simple work-order scheduling system will do. The main point is that it be well done and upheld as a continuous part of production planning.

We do not use too complicated time-study techniques, nor do we set highest performance standards in order to achieve records in work times in our scheduling. We expect and schedule our work at about 85 per cent of top efficiency, be this in man work or in machine jobs. With this as a starting basis we have not had and do not expect to have many difficulties.

At 85 per cent of top efficiency neither the men nor the machines are overworked or overstrained, but we do know that much greater performance is possible. We know that our *basic production planning gives fair productivity, fair to men and fair to management.*

Planning for 85 per cent of top efficiency as regular work performance does not give lowest costs but only reasonable costs. In order to get best productivity and lowest costs, special methods must be applied. By now quite a few have been developed. They can be classified into four basic patterns. From them the manager has to choose most carefully the one which he would feel is best for his plant. The most important patterns are described below.

Good Productivity in Spite of Old Equipment

In small plants where so many incredible things happen, one can find occasionally that a top performance in volume and at lowest costs is achieved with equipment that is by no means new and perhaps obsolete but is in good repair and in good operating condition.

The secret of the volume perfection lies in the low volume of work that is needed. It is sufficient to keep the plant going at best capacity. The secret of lowest costs comes from the fact that the building is fully paid for, all machines are written off, and therefore little overhead has to be charged.

These conditions are much more frequent than one may realize, but they cannot be readily applied or duplicated at will in other plants.

Better Productivity through Wage Incentives

About 60 per cent of all factory workers in American small plants are on *wage incentives*, and many different incentive systems are applied in the different kinds of production work in order to obtain high productivity.

The reasons for this extensive application of wage incentives in small plants is obvious. Wage-incentive plans are methods of paying workers in some degree for their effort rather than of paying them on the basis of the time they spend at work. Wage incentives permit substantial increases in wages and effect significant decreases in the unit cost of production. It has been observed that an increase in production per man-hour of about 40 per cent may occur in the first 90 days of operation of a new plan.

In an ideal industrial society each individual in management and labor would desire to think and work up to his capacity. There would result the best of engineering, plant layout, scheduling, working conditions, production, and earnings. There are probably a few instances where, through inspired leadership and excellent cooperation, this condition is approached. However, being mortals, we are actually far from this ideal condition.

Profits and possibility of salary increases have been the chief means of encouraging management to do its best. Wage incentives were established to provide the seemingly necessary motive to create a desire among workers to increase their productivity.

The incentive-wage methods generally do not require new or even improved machinery. Nor do they require much more intensive supervision. The worker, under his own effort and using his own intelligence, improves productivity as best as he can and as much as the facilities available to him permit. The cost of additional inspection is usually not increased. For all these reasons the wage-incentive systems are economical for the management and relatively easy to introduce.

Although the workers turn out more work, the value of their increased production is somewhat higher than what their increased payment will be. This is a feature of most prevailing incentive systems. And since they earn more and the managements obtain more products to sell, both find their incentive method satisfactory. Also the unions usually agree unless the incentive is insufficient.

With incentive-wage methods quite definite improvement in productivity can be achieved. Applied in form of *overtime payments* at $1\frac{1}{2}$ times the regular wage, productivity increases that may be desired for short periods can be solved. If applied in the form of permanent incentive systems, usually a truly high, almost 100 per cent worker's productivity can be obtained for as long as the incentive method is applied.

The savings in costs achieved by incentive systems depend on the incentive plan used as well as on the share the worker is paid and on the other share that management can retain. Some forms of the Emerson plan, for instance, leave little cost savings to the management because they give nearly all savings to the workers. Other plans yield as much as 30 or 40 per cent or more of the value of increased production to the management for cost lowering, but they are open to criticism by the men and their union. Overtime costs 50 per cent more for wages and gives usually little or nothing more than regular work wages in form of units. Thus it is very costly for the management and a penalty for not getting work done during regular hours.

Incentivized productivity has its main shortcoming in the fact that it deals only or mainly with the efficiency of the workers but does not cover the whole work cycle, which means the entire time from the beginning to the delivery of a part or product.

Accordingly, it is entirely feasible that *work* operations be performed at time top speeds by the workers, who work hard in order to get the incentives, while *in between the work operations* more time is wasted, purposely perhaps, than ever was saved up in the work operations. In this manner only a fictitious best productivity is created in the work operations, but no cost savings at all are obtained by the management, which also has to consider the in-between operations.

In many instances the incentive plans have been further used to obtain

the employment of "helpers" and other nonessential men, who are claimed to be needed to obtain best performance in certain jobs. "Feather bedding" is the term for this kind of practice.

The most striking proof of the practical shortcomings of incentive plans as productivity creators is given by the fact that in certain industries twice as many workers at highest wages and ample incentives turn out only as much or little more than what half as many workers did before the war at two-thirds or half of the present wages. Certainly this indicates a drop in productivity rather than an improvement, and reports of 50 or 60 per cent productivity have been received from many industries.

As long as one measures productivity only in terms of time, it may well be that the incentive has reduced a job from

1.6 hours prior to the incentive to
1.3 hours for the new incentive basis (Standard)
and to
1.0 hour of actual, incentivized *work time*.

But if also *wage increases* and *incentive payments* are considered, then best productivity may not have been achieved, since *no cost savings* remain; in fact, costs may have gone up, as they did for nearly every product made today.

In all those economic periods when increased volume is difficult or impossible to sell, the manager should most carefully check *all* the results obtained or obtainable under incentive plans. He should figure out their *true productivity*, not only in terms of time, but also in terms of actual cost savings.

Although it is almost universally true that a wage-incentive plan will increase production and save man power soon after it is installed, it is also unfortunately true that a carelessly conceived or poorly maintained plan is likely to bog down, cause bad labor relations, and end in restricted production. It is a fact that there are many plans all over the country which have been operating for years on an unscientific basis, with lack of proper management attention and accompanied by recurrent labor-management disputes.

A wage-incentive plan is neither a perfect device nor a panacea. It cannot be said that differences of opinion do not arise between management and labor regarding the fairness of standards. They surely do. But incentives not only offer inducement, they provide a demonstration of urgency. They are a time-tested way to get better results. They are traditional in the American system and should be used where they fill the needs.

Best Productivity through Methods Improvement

For the small plant this kind of approach to *obtaining productivity through methods improvement* is possibly the best. So far, it has been applied least. Above all, these techniques create truly best productivity and lowest costs and leave no dire economic consequences.

In a small plant which is started new and where management from the beginning and later provides for good facilities and methods, improvement does not have to rely on the workers' initiative and does not have to stimulate them into personal efforts to obtain best productivity.

A small plant where good facilities and improved methods are provided will give as much output as the facilities and methods yield. If planned correctly as to size, products, processes, machines, and other basic factors, it does not need more workers than are required to run the plant. And thus it has few to dismiss as long as it is operated at all. A plant of this kind can turn out most volume at low costs at all times and does not have to depend on the men entirely to obtain good productivity and good costs. Both are permanently engineered into the plant, and the stress is upon engineering and work methods rather than upon wages, incentives, and bargaining.

An old small plant that is transformed to better facilities and better work methods will possibly need fewer men, but after this, it can be managed to show the same good features as a new, well-methodized plant; it can be made stable as well as quite productive.

The provision of good facilities and of good methods costs less than incentives cost in the long run, and engineering as well as work-methods improvement can also be brought about in gradual steps where funds are missing to do it in one sweep.

That costs can be brought down in this manner and that productivity can be improved to good levels and wages can be kept high have been proved before and during the war and are proved over and over again with increasing competition.

The secret of the success of this methods approach to productivity lies in the simple fact not only that workers, work times, and work operations are carefully studied but that for the entire work task to be done—for productive as well as nonproductive work—the best way of doing it is provided.

Methods engineering is good in good times and good in difficult times for getting productivity. It gives as much output as has been provided for in terms of machines and of methods. A plant of this kind can be given a range of flexibility, and its savings in costs are such that at all times it can adjust itself to changing economic conditions and hope to sell its goods also in rather competitive markets. Few of such plants had to be closed so far, and not many will have to be closed in the future.

Engineering improvements are somewhat more difficult to install than wage incentives in order to create good productivity. They can be made to pay men well; they prevent argumentation and are therefore among the more desirable methods to obtain best productivity for all times.

Very Best Productivity through Supermodern Equipment

Continuous processing, automatic equipment, high-efficiency machines, conveyORIZED transportation, optimal space utilization, finest working conditions, combined with high wage payments and very best productivity are by no means pipe dreams or visionary thinking still to be achieved some time in the future.

All these engineering feats can be found installed in some of the smallest plants. They mark the achievement of the highest level of engineering and possibly also of shop management so far known.

Perfection of this kind is not created by quibbling with the workers or by creating minor improvements here and there but by mobilizing best engineering knowledge and combining it with a new kind of management thinking that aims from the start to create the greatest volume of products in the best manner, in order to achieve lowest costs and serve a maximum number of buyers.

This kind of productivity does not only seek and rely on the available or known markets; this kind of thinking tries to create new, bigger, longer, and wider markets.

The lowest costs thus created are not shared between the workers and the management alone; they are shared with the consumers, still to be found, still to be won, still to be educated to absorb the large quantity of goods that can be created.

It takes courage to think in this kind of productivity and still more courage to invest in a plant of this kind on the mere condition that best products can be made at lowest costs and will conquer the widest market.

Yet this conviction has been borne out time and again. It has made small plants large and large plants bigger. Food canning done in tens of thousands of small plants not only has become a large industry but has benefited farmers, families, workers, and managers, who otherwise would not be there. The garment, clothing, hat, and apparel industries, mostly small plants but working at very best productivity, have brought out hundreds of thousands of products at prices so low and in such variety that even the poorest could buy them.

The supply-industry plants are by no means all large. In fact, most of them are of small size as far as plant size goes. But their productivity is not

only high, it is the highest known anywhere, and through their work tens of thousands of complex products are now available to millions of people.

*Best Engineering and Best Management
the Keys to Best Productivity*

As this review of the patterns that have been evolved to create productivity indicates, best productivity in production work or in rendering technical services is not a matter of abstract or theoretical thinking alone. Nor is it only a matter of stimulating workers or managers by the prospect of higher rewards or higher profits. It needs best engineering and best management action actually to create it.

Besides, the highest productivity so far known has been created not only by setting the proper objectives in terms of output per man-hour or similar measures, but above all by bringing the interests of the consumers and final buyers of goods into the scope of thinking.

In 1939, 1 pound of a Cadillac automobile cost only 60 cents, although in the car were about 6,500 parts, probably 80,000 to 100,000 work operations, and, besides 3,300 pounds of material of all kinds and the finest of workmanship. One pound of Ford cars cost only 30 cents. A pound of precision machinery hardly cost more than 80 cents, and a house could be had for 20 to 30 cents per pound. Productivity thus really considered and meant consumer interest. A great number of people could buy.

Now that consumer interest seems to have been left out from setting the basic objectives for productivity, wages and costs and prices are highest, but markets are shrinking.

Clearly, the more one studies best productivity and the methods of achieving it, the more he comes to realize that the methods of measuring are of much less importance than the *final aims, which should be the creation of productivity through engineering and management measures that actually would yield lower costs.*

Only if scientists, managers, workers, and above all the unions will come to realize again that best productivity is not only a matter of maximum volume or maximum wages at minimum man-hours, but a matter of reaching a maximum of consumers through minimum costs, the true meaning of productivity will have been fulfilled, at least in production and possibly in all other activities.

AUXILIARY METHODS FOR MEASURING OR
CREATING PRODUCTIVITY

In addition to engineering and management and in addition to men, machines, and methods which must be used in creating best productivity, every manager has by now at his disposal a variety of basic auxiliary methods

which help him to measure and to direct his actions toward the achievement of higher and probably best productivity.

It may be difficult to develop perfect productivity measures for the entire economy or large groups, but for measuring productivity on smaller scales quite a few management methods actually have been used in large as well as small plants, mainly for the purpose of control and also for creating at least better productivity than existed before.³ They are:

1. Budgeting and especially production budgets
2. Cost accounting and especially production-cost analysis
3. Standard costs and especially cost standards for materials, labor, and overhead or burden expenses
4. Management ratios, especially those measuring production-management efficiency.

Each one of these methods can be and has been used in small plants, not in all of them to be sure, but in the better managed ones. Not all are best for the small plants, but a manager definitely should use one or more of them.

We make up a production budget as part of our general planning and budgeting procedure.

One object of this budget is control of overhead expense, but the only aspect which is of concern here is the method of reconciling actual production with estimated sales requirements in a coming period. Our budget is, therefore, a manufacturing program that is in question, determining the volume of production each week or month for a period of several weeks or months ahead.

As we go along, we check how close our actual expense has been to the budget, and we thereby obtain clues as to where we are weak and take steps to improve at these points.

In order to review the management methods for their usefulness toward the creation of productivity, their strong as well as their weak points are set forth below. For all of them it should be kept in mind that they are auxiliaries for measuring productivity rather than the real means to get productivity such as engineering and shop-management measures.

Production Budgets as Means of Obtaining Productivity

Budgeting, at least in simple forms, is probably more in use in small plants than the other methods. Often only a sales budget is prepared, but nearly always expenses for selling, production, and other requirements, such as engineering or research, are made part of a simple budget control.

³ For additional information on these methods see Chap. 8, Supervising and Controlling the Small Plant; also Chap. 16, How to Do and Use Accounting.

A budget is an estimate, usually made before the start of a new fiscal year. It shows what incoming amounts are hoped for, and what outgoing amounts should or could be allowed during the budget period, which may be chosen as 1, 3, 6, or 12 months in advance.

Since all budgeting is done in dollar figures, any attempt at reliability or accuracy is handicapped by a multitude of possible changes in prices, units, material costs, wage costs, and overhead costs for services, transportation, etc. As it is most difficult to foresee all these possible changes, no budget procedure ever has been or ever will be a truly reliable means for planning the desired or for measuring the actual performance or the degree of perfection obtained.

Nevertheless, many plant managers think in terms of dollar figures, and by preparing budgets they develop at least a preconsidered financial operating program which they try to uphold as a goal. If it is carefully done, budgeting and the final check of the actual situation against the planned one are desirable procedures.

If the production budget is made up in physical units and also in dollars, this definitely helps in managing and in achieving productivity per man-hour as well as low costs. At least an attempt is made to aim in this direction, which is always desirable.

Since good budgeting is a rather complex process, no attempt is made to explore its techniques. Only its desirability is indicated and endorsed for small plant operation because it also helps in keeping the plant up-to-date and providing for new needs in machines, tools, or equipment.

Production-cost Analysis as Means of Obtaining Productivity

Financial data on production, as they actually materialized during last month or last week or during the year, are always worth analyzing if they are available in sufficient detail to reveal definite developments in certain cost or expense items, in the various sections of the plant, or in certain kinds of work or jobs.

Since accounting furnishes data only long *after* the action has taken place, a good deal of the analysis furnishes only hindsight and the manager must supply the foresight for the future. If the cost-accounting data are not too much delayed before they are analyzed, a good deal for better management and also better engineering can be learned from the figures. In particular, production expenses can be studied carefully and steps taken so that the expenses yield the desired performance and productivity.

Actual production-cost figures have more convincingness to foremen and others than budget figures, and this is an important point whenever higher productivity is desired.

The use of cost analysis, properly done and based on carefully established accounting data, is a good approach to obtaining higher productivity.

Cost Standards as Means of Obtaining Productivity

Before the war, *cost standards or standard costs* were considered by some as one best method for getting production men to become better managers. A few large companies tried, but most of them gave up. The preparation of a multitude of material-cost standards, wage-cost standards, and overhead-cost standards is worth doing only if unit-output standards also are prepared.

In the small plant, there are usually not sufficient employees or the proper knowledge available to do this kind of work sufficiently well, with the proper advance knowledge, and with sufficient definiteness to impress anyone in the shop.

Even if fairly accurate cost standards were established in periods of economic stability, in times of cost instability the mere readjustment of all the various cost standards for any period ahead would be an undertaking few small plant managers would attempt.

Management Ratios as Means of Obtaining Productivity

Hardly can management ratios of the commonly known variety be used to improve production in fine detail. This will have to be done by the men, foremen, engineer, or manager. But where an easily established, understandable, and reliable over-all control is desired to measure not only the performance achieved but also the level of productivity and the trends toward improvement or decline in the plant, *management ratios seem to be very much worth having*, either alone or as complements to a production budget system or in addition to some production-cost analysis procedure. They are easy to establish and require little extra work, few statistical data, and can be calculated weekly or monthly, for any period or a whole year.

There is no dearth of such ratios, and the more useful ones are listed below:

Management Ratios Measuring Productivity

$$\begin{aligned} \text{Total plant productivity} &= \frac{\text{number of output units made (week or month)}}{\text{number of man-hours worked (week or month)}} \\ \text{or} & \frac{\text{total cost value of production (week or month)}}{\text{number of man-hours worked (week or month)}} \\ \text{or} & \frac{\text{total cost value of production (week or month)}}{\text{total value of direct and indirect wages}} \end{aligned}$$

These three ratios correspond to those most frequently recommended in scientific discussions on productivity. By using the same ratios, but using data for only certain shop sections or products, one can also measure and follow up the productivity obtained in these sections or parts of production. If output cannot be stated in units, the weight or cubage or any other measures common to the variety of products can be used. By using monetary values of costs, production, wages, or man-hours one can measure even totally different production lines and combinations thereof and thus determine the productivity of plants although they may do a variety of work. And if some prices or costs change, one can also recalculate the affected values to the old prices or costs and thus establish a long-trend series of uniform cost- or price-measuring indexes which will give true comparability of the weekly or monthly or extended findings.

These measuring techniques should suffice for most small plants and give sufficient guidance to the manager for an intelligent appraisal of the productivity attained. Those who desire finer analysis, covering machine utilization, shop transportation, production-expense productivity, labor turnover, absenteeism, or any other phase of production work, can either find suitable ratios in Alford and Bangs, *Production Handbook* (The Ronald Press Company), or construct some new ratios suited to their needs.

SUMMATION ON HOW TO GET BEST PRODUCTIVITY

1. *Best productivity should be desired* not only in production, which is the only field covered in this chapter, but also in engineering, technical research, sales, and all other phases of work, such as accounting, cost accounting, and even paying taxes.

2. *Best engineering and best shop management should be applied* not only in the actual performance of production work or in any other kind of work but also in planning, organizing, operating, and supervising if best productivity is desired for the entire plant.

3. *Methods for measuring productivity should be used even in the small plant*, because they cost little, can be used to determine weak spots, and serve to transform management thinking into management action.

CHAPTER 14

HOW TO DO TECHNICAL RESEARCH

BY

FRANK WILLIAM MILLER, *Vice-President*
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In the smaller plants nearly everyone with a creative aptitude may have to undertake occasional research in order to assist in developing a new product or improving an old one. Research is a function along with others, such as solving production problems, personnel problems, and financial problems, in which managers participate. The necessity for doing research may arise spontaneously or may be decided upon after careful deliberation as part of the small company's pride and efforts to show what it can do to keep progressing.

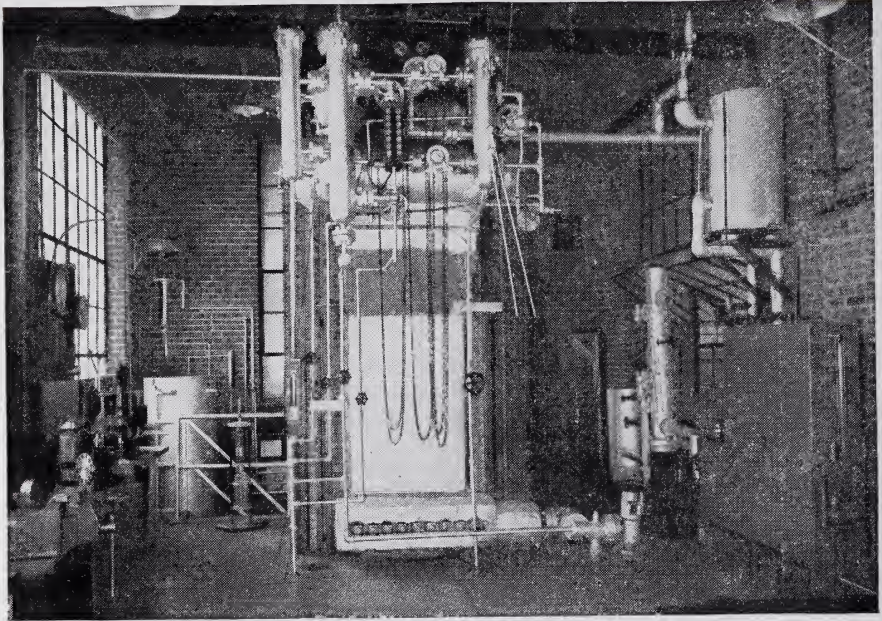
It is gratifying to see managers and men in small companies cooperating closely and with cheerful determination to take weak spots out of processes, develop better qualities, overcome bottlenecks, please customers, or keep pace with technical advances that will keep all the men on the job, proud and happy of their role in the achievements.

This common interest in the solution of technical difficulties is the necessary basis upon which at least a majority of all the 280,000 small plants maintain themselves in business. Where it is missing, the small plant stagnates and finally withers. No small plant manager alone can create all the necessary improvements, do all the thinking that is needed, and try and try again until all problems are solved. To help him he must depend on the ingenuity of those men in his company who can contribute new ideas.

Perhaps this may be called applied research, and through it the desire for technical improvement is realized. It is definitely the fountain and origin of all those ideas which are systematically developed in these small plants. These small plants make special products, difficult mechanisms, unusual items for which there may or may not be a mass market, and those thousands of useful articles that are needed in our high-level civilization.

¹ The author is in charge of production and research of a small but well-known plant making blowoff valves, impulse steam traps, strainers, expansion joints, liquid-level indicators, water-level gauges, spray nozzles, and hydraulic valves.

INSURING THE FUTURE AT YARNALL-WARING COMPANY



In center, high-pressure (2,500 lb. wsp) test boiler equipped with operating and experimental Yarway water columns, water-level gauges, and blow-off valves. Boiler steam drum is 18 in. diameter, 3 in. wall thickness; tubes are $1\frac{7}{8}$ in., $\frac{5}{16}$ in. thickness. Heating surface, 130 sq ft; furnace volume, 82 cu ft.; gas fired from city supply, automatically controlled. Still at rear left furnishes pure feed water and superheater on right-hand wall is used as source of high-temperature steam. Other equipment (some not shown) includes apparatus for experimental work on steam traps, expansion joints, and liquid-level indicators.

SCOPE OF RESEARCH IN THE SMALL PLANT

The prime urge to provide for research is a desire to perpetuate a business. Commercial sagacity is keen in successful management men. They know the value of *providing a needed article* which will do more or better things for more people. They install research for this purpose and expect such articles from their researchers. There is a reward which comes from such products. Besides, there are rewards that are incidental but nevertheless are of great value to the company.

Basic research as done by the larger companies may yield unexpected new products. The small company, however, seldom finds itself financially able to pursue basic research. The small company does plan and execute, for its advantage, product research and development.

To illustrate this, probably each manager or researcher can think of improvements made in some of his products or the development of new products. At Yarnall-Waring Company we have a small Research Department which is staffed by men who are contributing substantially to new and better Yarway products.

Research also creates prestige which, for example, may be instrumental in the furthering of an advertising program.

Frequent objectives of *improvement research* are *saving of material* because the product is smaller or *use of a material* in construction which is abundant, thereby saving a strategic material for the products for which no substitute has been found. Still more frequent and most important is the *search for new products* to be made available for allied industries further to improve their own products.

Industry moves forward on a broad front. Each idea helps to determine our future and contributes to the advancement of industry and commerce. Just the saving of metal required to make a product, as, for example, reducing the weight of a valve by 25 per cent, is, to the company making the valve, a real advance. But equally important is the possibility of using that saved metal for other needed products to enrich our lives. Besides, it is easy to understand how the transporting of such valves has been aided. Since they are smaller, more valves can be hauled in the same space or the same number of valves and additional items can be shipped.

From research more things for more people result and contributions are created which are building blocks for a higher standard of living. From the selfish desire to perpetuate a business there comes in the end an unselfish contribution to mankind.

HOW TO PLAN AND ORGANIZE FOR RESEARCH

Let us take a small industrial organization without a research or development department, and together we shall install such a department. At the conclusion we shall have a department staffed and equipped. It will contribute substantially to the healthy progress of this company.

The steps to be taken usually can be and should be arranged in a systematic pattern to obtain best results as follows:

1. It needs a *decision really to establish research* as a distinct activity within the company.
2. The need for research should be *convincingly proved* to all concerned.
3. A *list of problems deserving research* should be established.
4. *Sequence* of research work must be scheduled.

5. The *research personnel* must be obtained, trained to work as a group, and encouraged.
6. A definite *research philosophy* should be evolved and used as a guide for the research work.
7. *Company policies* must be made known.
8. Adequate *space for research activities* should be provided.
9. *Equipment* should be obtained.
10. A research *budget* should be authorized.
11. Actual research can then *get under way*.

In the following sections each one of these steps will be described in detail.

WHEN THE MANAGEMENT MUST DECIDE TO DO RESEARCH

This may at first seem elementary, but there comes a time when someone will ask the question, "Should we have a research department?" This will not occur to all key men in the organization, for they may not know the benefits to be gained. Then there is a need for those informed to acquaint the others. A few basic facts, together with a summary of experiences to date, will usually be convincing.

Research, as a distinct, well-organized, and carefully guided activity, is usually a needed and worthy undertaking even in the small plant WHEN

1. The company makes a simple or complex mechanism or any chemical, food, ceramic, or textile article which must be sold mainly on the strength of its competitive quality.
2. The quality features have to be strictly observed and improved to maintain and improve the position of the company in its field of endeavor.
3. Competition brings out superior products regularly or by surprise, in order to attract more sales and customers.
4. Sales are falling off, because this indicates that competitors are forging ahead and the company is losing ground.
5. Competitors are cutting prices and improving quality at the same time; this means that research is the only means left and should be installed before it is too late.

GIVING PROOF FOR THE NEED OF RESEARCH

Most enterprises are started with a basically sound product idea. This idea is expanded to additional uses or enlarged to cover adequately a greater field of similar uses. However, any product runs its course of useful-

ness, and then comes the time when it is necessary to expand further or find new products to keep the company going prosperously through the systematic development of new ideas.

How is this to be done? In most cases everyone dabbles at this problem for a while, but no one has sufficient time to do a thorough job. Since no really good new ideas are produced, the necessary appropriations for advertising and producing the poorly conceived improvements are only half-heartedly fostered. Any new idea or product born in such an atmosphere will surely become anemic and lead a faltering life. Success is not born of such planning or, rather, lack of planning. As a result the future is insecure.

At such a point of uncertainty, the management may decide to discontinue all its activities. This has happened many times in the past and is happening today. The loss is great and final. However, planning, which aims to avoid such a position, and dissatisfaction with the sad prospect of lack of progress or even failure should produce a decision to have a department devoted to research. Furthermore, this research should be applied research and development. "Research may be defined as the search after new information by the experimental method. Applied research seeks to solve specific problems with consumer utility as a direct incentive." This is the definition given by Spriegel and Lansburgh in their book *Industrial Management* (1947). It fits the small plant approach.

In our everyday lives there is a multitude of ideas coming to our attention as a result of questions asked and through environmental influences. Not always are these ideas clear or strong at the start. The germ from which an embryonic idea is born may begin life in any of many ways. The germ, once recognized through the fog of the unknown, should be carefully nurtured, for it may be of great value. The resulting idea is taken for a journey through *past experiences, competitive fields, economic examinations, practical uses, and customer reactions and then through the necessary development stages.*

In this journey, which may be as eventful as a fast-moving novel and as fascinating as a Conan Doyle story, there probably will be rough going but also stretches of smooth highway where the traveling will be easy. In these calmer periods we probably can *study the work of others*, and by learning from it, we can find solutions for our immediate and future problems. This is the basic assurance that the company can and will move forward. It should be expected that even with research the journey may be rough and dangerous from time to time. In such difficulties the research engineer will be tried at every turn to find the best road which will lead the company to the successful achievement of its goals. But with good research and good management, success should be the reward.

HOW TO DO RESEARCH IN THE SMALL PLANT

Make a List of Problems Deserving Research

When the need for a research department is recognized by management, *a list of problems should be prepared* concurrently or, as happens in many cases, even before. The first of these problems is usually one of need for *improvements in existing products*. This stems from advancement in allied lines of products made by those who buy from the company and therefore require products which have likewise progressed.

Also important in this awakening are the *improvements being made by competitors* in their products. In either case there is the age-old claim upon us, *i.e.*, the survival of the fittest. In some product lines we cannot survive, as competition may advance beyond our ability to keep up.

Or a *new industry* is born which needs new products or forces our product or old ideas into the discard. Therefore we cannot be content with improving one product only. *Often the need for broadening the entire base is a requirement.* To broaden the base suggests more products.

Ideas and suggestions do flow in from many sources. Customers, salesmen, engineers, research workers, men with ideas in allied companies, etc., send in ideas which they hope will find favor in the research project planning. From these, selections are made for continuing the business, and then follows full development of the improvements to be made. In their entirety they give the clues for the list from which a definite research program can be evolved.

The Research Schedule

A clear *timetable* for all the research projects, showing dates for beginning and finishing, is a stimulant to the researcher. This is indirectly an indication on the part of management to him of the importance of the research work that he will do. *Reasonable time allowances* must be made for contingencies. The researcher responsible for performance on any project must have confidence that management has given sufficient time for producing a worthy item or process. A short period for completion must not be construed as a means of expediting the work to the degree that failure is sure to result. Such an attitude on the part of any worker must be avoided because it destroys the winning spirit so essential in this department.

Time budgeting as well as money budgeting can be great aids in the efficient performance of research workers. To save time, short cuts are often advisable and should be permitted. But they should not detract from the quality and effectiveness of the research covering a finished process or product. Cutting costs, resulting in over-all savings, is one of the prime objectives of research, but cutting of research time does not always yield them.

The research schedule should allow ample time to do a good research job and justice to all projects listed.

The task of preparing the research schedule must be taken seriously by a manager or, if there are a few, by the management team. They should *select the projects from the many ready for immediate consideration*. This selection is first made on the basis of their relation to the present products.

For example, the company may have a line of heat exchangers. These actually cover a wide range of pressures and temperatures. But there is a recognized need in the industry for a better heat exchanger because of tube failures. The company managers *sense this need and decide* it would be to their advantage and the advantage of the industry to find a solution to this problem at an early date. Therefore it is assigned, and the *reasons for the assignment are carefully explained to the researcher* who is to work on the project. The *researcher should participate* in making this decision. In this way he is fully informed concerning the background of this assignment and will be guided by the thinking of those who desired the job done, especially as to time and money allotted for the development.

Second, the selection of a research project may be established on the basis of its *uniqueness and individuality and the contribution to the industry* which is expected to result. Such a selection is made, knowing the greater responsibility which will be placed on the entire organization. It is recognized at once, for instance, that such things as new equipment for the manufacture of a new or improved item may be required, as well as new inventory, and that a new group of customers would have to be found which may require a new sales force to supplement the present force, etc. This is somewhat like setting up an additional and completely new organization. It can and should be developed slowly and with caution to ensure success, so as not to outrun the potential returns of the item and thus incur heavy unwarranted investments. This is to be avoided by those in responsible charge.

Research departments and their schedules are not a means of getting rich quickly. They are a means to security, and by constant effort and wise direction a large degree of security for the company can be assured. The proper timing and good scheduling of research help immeasurably to achieve it.

Research Personnel

Selecting the man who will do the research and then assisting him in the selection of others for his department constitute a task of the management upon which a large part of the success of the department depends. First he himself must meet several requirements such as honesty, integrity, loyalty, technical ability, leadership, and enthusiasm for his work. He must also have the quality of clear vision and particularly the ability to penetrate beyond the known. With this quality he can recognize facts which are obscure to others. By putting these facts together with ideas which are suggested by surrounding influences, new products are born. Thus the man should fit the established purpose of this department.

In a small company only a very small research department can be supported. In addition to the man in charge, an *able mechanic of the all-round kind* is an essential. He should make everything needed, such as models and test equipment. He should help in running tests, make suggestions for improving department functioning, and be especially helpful in selecting equipment.

The number of *assistants to the main research man* will depend on the size of company, nature of products, and the growth requirements. These men should have technical background and be keenly interested in their assignments. They must be equipped with a high degree of ingenuity and unflinching in the knowledge that all problems are to be solved in securing a desired result. Discouragement is a word they should not understand and one to the meaning of which they should never succumb.

Although individualists, they should be trained to *work cooperatively* in a common effort to help guarantee the future of the company. The employees in this department should be bound together by a knowledge of the company's need for them and by a loyalty which keeps the company secure in developing new, unique, practical ideas for new products. On the other hand, they themselves should make sure that nothing will be divulged to others outside the organization. The wrong outside persons may exploit the item to the detriment of the employee's own company. Security, then, for the company is also security for the employee, and both must earn it honestly.

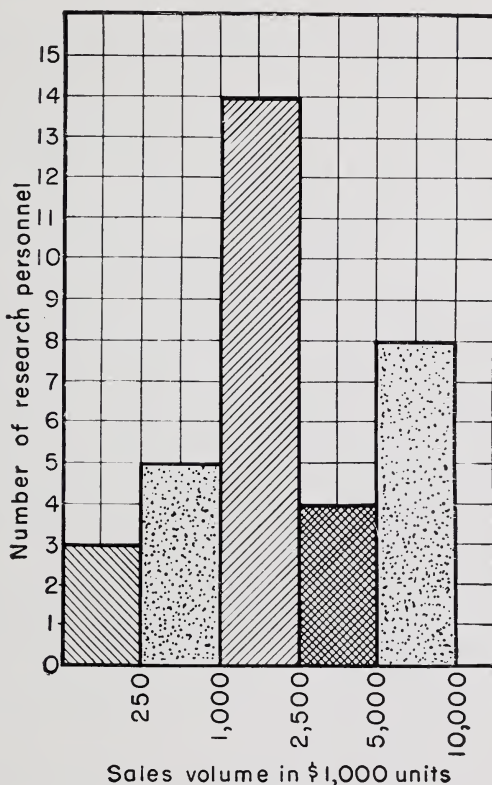
All researchers become better researchers as they progress in their work, having the greater experience gained from doing things and working with others while learning from them. Besides, they should be encouraged to take an active interest in learning from technical meetings and technical schools the latest thinking in their field of endeavor and in allied fields.

Discussions should be fostered, since they assist in dissipating the fog obscuring dormant ideas.

Scientists belong to professions that encourage novel thoughts. Novel ideas receive the highest awards, and mostly they come from the strata that have been first thoroughly probed in experimental searches. *Visionaries with a germ of practicality are needed to break from the normal pattern.* They are evolutionary rather than revolutionary in the ideas presented for consideration. It is from these that the greatest design advances are made.

RESEARCH PERSONNEL VS. SALES VOLUME

1947



GRAPH NO. 1

How Many Employees to Have in Research: This is a question often asked but somewhat difficult to answer. A small firm may have only one good man in research and get ample returns from his services. Others may have three, four, or more and receive little from their work.

Research is not so much a matter of numbers of employees but rather a matter of technical ability and creativeness, which is proved by the fact that

in many small plants the owner himself contributes substantially to the research and development of selected ideas.

Nevertheless, Graph 1 is offered to help in developing an answer to the question in regard to numbers of research employees. These data are taken from a National Association of Manufacturers survey made in 1947.

FUNDAMENTALS FOR A RESEARCH PHILOSOPHY

Medical doctors say that no two people are alike, and as a result they diagnose each patient and deal with him as though they were doing research, conducting a new and most important experiment. This is an approach to healing mankind which draws on the best thinking of the profession. This spirit, prevalent in the doctor's philosophy of his profession, ensures a continuing alertness to the specific needs of his patients.

Engineers do not take the Hippocratic oath, but they have "The Canons of Ethics for Engineers" to which they subscribe. There is a fundamental similarity in the approach of these trained professional men to the problems before them. Above and beyond solving the immediate problems at hand, the improvement of the welfare of their countrymen is devoutly desired. This is especially true of the seasoned researcher who has developed a feeling of responsibility for humanity in each idea he develops. It is not enough to present a theory, a practice, or an idea which will make a profit. *The new discoveries must justify their development by being improvements over what has gone before.* This is a desirable challenge to all researchers, for it is an incentive to build better for tomorrow.

Confidence comes from success in a particular field of endeavor. With success there is associated a like degree of pleasure in performing the duties. Success feeds upon this pleasure and grows to foster mental strength. Such strength goes far to create a contributing personnel group in the research department. Such a group has confidence in itself. Some men become more proficient than others in a given kind of work. Their work, which at first should preferably be the less difficult kind, will contribute toward a broadened knowledge and a measure of confidence.

This kind of philosophy merely recognizes the probability that a man who was successful in contributing ideas to the development of successful watches is more likely to continue successful in the development of small intricate parts than one whose experience and success was in designing and developing earth-moving machinery. *The wise research man will make assignments to his group so that he can most effectively use its developed capabilities.* This, of course, requires at least some research in personnel.

In the small business each research worker develops all his latent talents. The more he has the more useful he is to the company.

With confidence comes a growing ability to do things (an awareness of the fruits of success) and the possibilities of progress. The path has understandable signs, and it is not quite so steep to climb. The more difficult problems are solved with a surprising mental agility.

Where this atmosphere of confidence prevails and the harvest of products is resulting in increased sales, there is the basis created for a healthy start in research activity.

COMPANY POLICIES MUST BE MADE KNOWN TO RESEARCH MEN

There is in each company, regardless of age, a *guiding policy* which has been developed either consciously or unconsciously. The policies in regard to interest in employee welfare, quality of products, sincerity in treating customers, and desired rate of company growth are among those things which should be clearly stated to all research workers.

The fairest of dealing with all at all times must be provided, and particular care be taken in explaining fully to them any change in policy and each new assignment. There is full expectancy that the company will, through its research man, keep a well-reasoned outline of projects to be done by any individual or any group, so they may condition themselves in preparation and often work on several projects at the same time. This is healthy morale building. Lack of activity or sudden assignments without sufficient introduction unnecessarily disturb the equilibrium.

It is most interesting to study the basic company policies which are built into their products, and more and more *buyers pay careful attention to every detail* that may offer a clue. Many purchasing agents are engineers, and they, as well as their test engineers and generally all good designers, can gauge from the looks of a product or from a blueprint the kind of company offering the product.

ADEQUATE SPACE FOR RESEARCH

A small company may at first find it convenient to *allocate only a small room or a portion of a room to research work*. Obviously, in the early stages research is subjected constantly to a critical examination. Often there is not much room or space available. Will it be a worthy venture? This is the big question, and 40, 30, or 20 years ago it was a big question indeed. However, today, we find on all sides this question being answered in the affirmative. A small room is probably the best a small company may

feel it can justify for research. It is something new, and conservatism guides the thinking when cost is considered. But even in a small room much useful thinking and building can be done, and the department can get started in establishing its place as an essential one in the company.

Research people are creators, and to realize a high degree of perfection from their talents, *it is necessary that a comfortable place be provided* and inhibitions be avoided. This fact is fundamental in research, and every plant manager should seriously consider it whenever the space problem for research arises or room for experiments is requested.

There is no hard-and-fast rule that one could develop for guidance on space for research. Bulky products and experiments may require much space, especially when research is to be carried on for a considerable period with several projects continuing at the same time. However, it may be possible to do this outside. Usually a small room will suffice to do all the research thinking.

Even in very small plants one can find laboratories de luxe, and in big plants rather inadequate research facilities and crowded research space can be observed. Each manager can suit his own taste, but poor space allowance is bound to have adverse effects on the research to be done.

RESEARCH FACILITIES AND EQUIPMENT

The *physical equipment* in a research department can become extensive. Many facilities are essential, such as machine tools necessary for producing models for form and for test under actual conditions. These models or test pieces are tested in conjunction with other equipment for extended periods of time, preferably in the research department. To do so it is, of course, necessary to have the *process equipment* or the *test apparatus*. Instruments of the recording and indicating types are usually required. Electricity for machine-tool motors and steam for operating test equipment are examples of necessary types of *energy sources*. Gas may be required for heating or heat-treating. Air or hydraulic pressure may be needed for regular or special testing. These are in addition to such items as piping, valves, tanks, metals of various types, materials, wood, plastics, and acids as may be required.

To avoid an excessive amount of equipment it is well to encourage a spirit of thriftiness, using equipment many times for similar tests rather than requiring new equipment each time. There is also the wise use of standard equipment on the market which is produced in large quantity. Usually these items can be purchased for a nominal sum and obtained quickly. If some such items cannot be used directly, they can be adapted at relatively low cost for test purposes.

There is, besides, that desirable quality of ingenuity exhibited by the

research-department personnel which builds *makeshift equipment*. It is a most commendable quality, especially in small companies where the budget is relatively small compared with the numerous tasks to be done. Such thriftiness can be encouraged by the manager. He knows of the needs when assigning the project and must plan an economical installation. An active, helpful purchasing department can aid in this.

Access to a good *technical library* and to *current pertinent magazines* affords sources of great help to this department's personnel. These facilities are mentioned briefly but are nonetheless important.

Much of the above equipment is in the class of capital goods and can be amortized as such. It is well to keep in mind the special character of some of this equipment and the need for accelerated depreciation.

RESEARCH DEPARTMENT BUDGET

As new assignments are given to the research department, a study is made of *estimated expenditures* for carrying forward the assignment either for a given period of time or to completion.

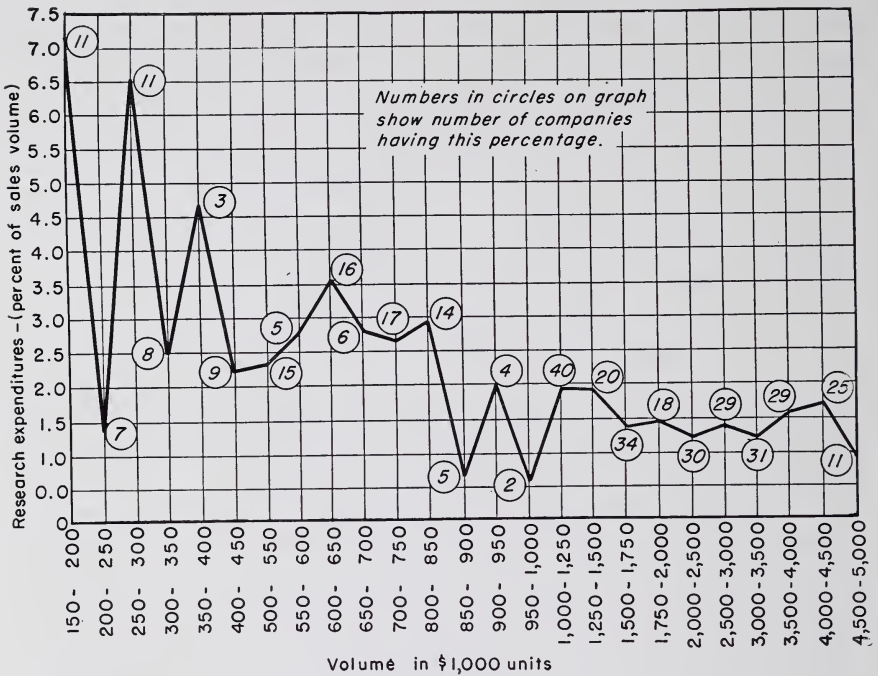
When a major assignment is made, it may not be entirely clear when it will reach its terminal point. In such cases the expenditure of a *preliminary amount* may be authorized. This is to pay costs over a given period. At the expiration of this time a conference is held to discuss the amount of money spent and progress made in this project and then to study the advisability of carrying the project on over another period, authorizing necessary money to do so. By this means there is *control of expenditures*, and even more important, the advisability of proceeding with the project can be determined. Some projects will be dropped in this kind of approach, *i.e.*, where careful budgeting is followed.

The *simpler assignments may be fully authorized*, and the money budgeted for their completion. In this case, of course, a periodic review will be made to see if the money is insufficient for completion or if the project should be simplified so as to be completed in a shorter time than that originally estimated.

A review of companies maintaining a research department reveals a fairly clear relationship between research expenditure and sales dollar volume. *The small company spends a larger percentage on research than the large company.* In a National Association of Manufacturers (NAM) survey made in 1947 there were 400 companies each having a sales volume of \$5 million or less per year. Of these companies a weighted value of 2.07 per cent is found when their research expenditures are compared with their sales volume. The smaller the sales volume the larger the percentage of research expenditures, as shown in Graph 2.

RESEARCH EXPENDITURE VS. SALES VOLUME

1947



GRAPH No. 2

Mention is made also of five companies having sales volumes of \$100,000 to \$150,000 per year, which spent 20 per cent of this amount on research. These figures are omitted in the graph above because they represent an unusually large expenditure for research. However, this information should be used for guidance along with that given in the graph.

Those companies having larger sales volumes, *i.e.*, those over \$5 million per year, support research programs which cost from 0.62 to 1.55 per cent of sales. In the 1947 survey made by NAM there were 283 such companies, the weighted average being 1.08 per cent. This information, too, is given here for comparison purposes only, as we are primarily concerned with the small companies.

HOW TO CARRY OUT THE RESEARCH

Once the small plant manager has decided that he needs and really wants technical research done in a systematic manner, and when he has planned and organized the research unit as recommended so far, the actual execu-

tion of the research work becomes relatively simple and ties itself in almost naturally with all the other work done in the plant.

Since for most research projects the desired result can be fairly definitely described and clearly stipulated, the researcher can *apply at least some fairly direct methods of investigation and development*. While often enough at first no satisfactory solution is found, continued investigation, combined with the application of trial-and-error methods, gives surprisingly frequently if not the specified result, then at least a satisfactory facsimile of it.

In large plants where ample funds and sufficient personnel are available, the research is simply continued until all objectives are fulfilled. In the small plant the manager is mostly forced *either to accept the facsimile achievement or to allow more funds for continued research efforts*.

In such cases it is a question of deciding how important the perfect solution would be for the company and the user. Generally, the small plant cannot and should not indulge in too much abstract or overrefined research, but it should continue its efforts as long as the experimenting is conducted along practical lines and gives at least plausible indications of satisfactory results. *Research projects which after a reasonable time do not indicate any satisfactory conclusions are better abandoned or shelved* for some time until a definite urgency proves the need for continuation.

On the other hand, shelving of a started research project always provides a delay during which competition may be active on a similar project. The decisions of delaying, curtailing, or abandoning research projects should therefore be carefully weighed before such changes in the research program and schedule are made.

In the small plant the execution of research is probably done best if at all times it is confined to the *practical, not too abstract, not too deep or involved, not too superficial, and not too costly*.

The prime objectives of creating better products and improvements that increase the company's production or strengthen its processing techniques in a workable manner should always be kept in mind. If research is applied in this manner, a continued share of the market can be assured, the company can preserve its reputation, and a competitive position can be maintained.

Research is concerned with cost, but *quality rather than cost should always be the prime thought*. Companies maintain themselves and survive through quality and superior quality rather than through price. Superior quality improves the possible quantity of sales, and more sales lower the cost per unit.

Price is one factor to be considered in research, but only quality can match or exceed the competition and create sufficient demand. No temporary economic condition need influence the faith in and execution of a

research program that has been carefully planned and accepted. Research is one fundamental through which the small company can protect and uphold its stability.

FIELD TESTS FOLLOWING THE RESEARCH WORK

When the development of a research project is initially completed in the research department, usually the major part of the work has been done. The best *tests in the research department* are, however, weak substitutes for real *field tests*. To extend the knowledge necessary for complete confidence in the satisfactory performance under actual field service conditions, it is necessary to install several units or processes in the most difficult field situations. They are carefully watched to obtain possible customer reactions. Unfavorable responses are analyzed, and corrections made. These may be minor, or they may be major. In either case changes must be made to overcome the objections. For instance, the heads of bolts may not be accessible when using wrenches commonly available to the customer. This can be a serious objection, and proper clearance must be provided. Fumes from a process may result in a hazard to employee health. Provision for removal by ducts may be required.

The first set of field trials may result in returning the units to the research department for further development. They have been unsatisfactory to the trial users. This again is an important step in perfecting for customer acceptance. Such field tests are run preferably within easy distance of the research department so that the men who have been close to the development can follow the field progress to satisfactory completion. Such tests are made on a cooperative basis with the user and with full knowledge that the installation is made for test purposes.

The fundamental theory basis for the needed improvement must be established again and tested in the research department, and the (often) long and tedious process of perfecting component parts must again find a more nearly perfect solution. The research department must do these things. The time has passed for the manufacturer to sell products that would not fulfill promises made to the buyers.

GIVE RECOGNITION FOR NEW, USEFUL, AND UNIQUE IDEAS

Ideas sometimes come from the most unexpected places; however, most of them come from the expected sources. But from wherever they come, *full credit should be given to the originator*. This is essential, and care must

be applied to ensure that full credit be given where it belongs. Short developments are relatively easy to trace back to the idea source. At the inception of the idea development there is mostly general agreement that an idea is good, and in that first period it often happens that several tentative ideas are suggested. The usefulness of ideas cannot be determined at the time of suggestion because of the lack of knowledge of the part they will play in the final unit, but as the time approaches for potential patent application, there should be a *review of the entire development in order to establish the allocation of credit*. The idea requiring an extended period for development should have its originator's name coupled with it along the entire way. This association will avoid unhappy consultations. If a patent is applied for, it will be made out in one or more names, with the patentee or patentees assigning the patent to the company which employs them. The number of patents in an employee's name serves to indicate his contributions to the company.

Should the idea come from a source outside the company but interested in its development, a somewhat different approach must be made in rewarding the source. In this case the originator is consulted for the purpose of arriving at a satisfactory *working agreement*. This may be an outright purchase or a payment of royalty, based on the assumption that a commercially acceptable, successful product will result from the combined efforts of the originator and the company's research personnel. Variations of these plans may be used, depending upon individual circumstances.

TRANSFORMING THE RESEARCH PROJECT INTO ACTUAL PRODUCTS

When the findings of a research project are finally approved, they should be *passed from the research department to the engineering or production men*. The research department usually produces commercial units in very small quantities. These are practice units, utilitarian in nature but needing refinement and often adaptation for economical production. The plant manager should meet with the research head and the engineer or chief production man to take the first steps in this transition following completely successful field tests. Sketches, models, tested units, and all data secured in tests are fully explained to the plant manager and his associates. They then prepare scale drawings, complete bills of material, and specifications. This information is subjected to analysis and determination of estimated shipping platform cost. The manager will use this study to establish an estimated cost and price and to determine the estimated sales potential. This information then is used to plan and start actual production in quantity.

Freedom for discussion between the research and engineering personnel is essential during the period devoted by engineering to the preparation of production information. Component parts of previously established production items are incorporated in the design whenever possible. The resulting increase in production reduces cost and avoids an increase in the number of inventory items to be carried. Close cooperation is especially desirable in the final planning period.

Following this period of close liaison, the engineering or production men assume complete responsibility for the making of the new product. But research still has not completed its tasks.

UTILIZATION OF RESEARCH WORK

The Research Report: The time spent and all details of the work done, results obtained, and patent applications entered are all summed up in a research report for reference and guidance. This report is prepared by the research department. Its cost may range from several dollars to several hundred dollars. When finished, it represents a record that can be used as the basis for a new service, product, or process. It must be complete with detailed information, including dimensioned sketches, test data (laboratory and field), actual models if possible, and written descriptions. All the facts are thus made available for use in sales programs, service activities, and customer bulletins.

As an example of such a report, the following is given. Though condensed, it gives somewhat more than an outline to serve here as typical for a small company:

Acid-resisting Trim for Valves Used on Steam Power Boilers

Purpose: Many of the valve trim materials in current use are subject to attack by boiler-cleaning acids and are, therefore, unsuitable for such installations. This report gives the results of tests performed on various trim materials under conditions simulating acid cleaning for the purpose of determining the type of material best suited to this service.

Although a variety of acids at various concentrations may be used for cleaning boilers, the general commercial treatment consists of circulating a solution of inhibited hydrochloric acid (of about 5 per cent concentration) through the boiler passages for a few hours at a temperature of approximately 150° F. While this solution is generally quite effective from the standpoint of scale removal, it is also one of the most severe of the cleaning acids used in its attack on the boiler trim. This general procedure, therefore, constituted a sound basis for corrosion testing and was used for the determination of relative corrosion rates in this investigation.

The apparatus for these tests consisted of a 2½-gallon capacity Pyrex tank

containing the acid solution immersed in a temperature-controlled water bath automatically maintained at $150^{\circ}\text{F.} \pm 2^{\circ}$. A motor-driven stirrer was provided to circulate the acid about the metal specimens, which were suspended in the acid solution from glass hooks. The acid solution was covered with a film of oil to prevent aeration and evaporation. A glass tube large enough to permit passage of the test specimens was extended into the bath to provide an oil-free area for entry and removal of specimens.

Tests were conducted to determine the corrosion resistance of various alloys separately exposed by suspension from insulation hooks and also in galvanic contact with low-carbon steel. These latter tests were performed to approximate the effect of valve trim in physical contact with a steel valve body. Specimens were carefully weighed on a chemical balance sensitive to 0.1 milligram before and after the test with the observance of the customary procedure for cleansing the specimen of corrosion products. The weight loss of the specimens together with the surface area was used as the basis for determination of the weight loss per unit area over the test period. This information was prepared in tabular form. Pictures were taken to show the appearance of the specimens at the conclusion of the test.

The results of these tests are given in terms of weight loss of the corrosion-resistant alloy and also for the carbon steel in contact. It was noted that alloys containing nickel and some molybdenum in galvanic contact with carbon steel showed reduced attack over that suffered separately and that the corrosion of the carbon steel is slightly increased by the galvanic contact. The order of these corrosion rates is such as to permit satisfactory applications of these alloys as valve trim in steel bodies with life expectancy corresponding to normal boiler life. The practical application of Type 316 and also Type 317 stainless steel for valve parts on boilers subjected to acid washing confirms the test results.

Factors such as hardness, resistance to erosion, accelerated corrosion of the valve body adjacent to the trim material, etc., were equally important in the selection of suitable valve trim materials.

Information for the Sales Personnel: Written instructions for the sales personnel concerning the new item are essential. They are needed to make the product known. Even more important are demonstrations and verbal instructions to the salesmen. A completely informed salesman is a strong ally, able and willing to solve problems posed by the customer. Without complete information and a thorough understanding of the new product, the salesman will unconsciously present a weak approach to a critical prospect. An approach which is weak does not make sales. So reference is made to the need for supporting the work done in the research department. Only through successful sales can the research program be justified.

Technical Questions for Service Purposes: In order to furnish full answers to strictly technical questions, they should be anticipated and answers prepared before the product is presented for sale. Customers are bound to ask

these questions, and the answers should be ready. If they are omitted, time will be lost, sales will be retarded or not made.

The main point in preparing these technical data is to prepare them intelligently, to cover all possible points of doubt, and to present them in a readable manner. At first not too many of these bulletins should be printed, because actual selling and service conditions will always add other points or questions which had not been previously considered.

Instructions for Customer Use: Instructions for installation, operation, maintenance, and repair of the unit by the installer and user should also be prepared. These instructions are the watchwords from the producer to the user. They must be clear, concise, and complete to convey an understanding of these aspects to the user's operators and maintenance men. The researcher has initiated a new item, but without the full description of its use, its value may be lost by neglect of proper instructions and best application.

PATENTS FOR THE SMALL PLANT²

Patents are the protection which makes progress possible. Without patents some companies could not stay in business. During the protected period a company can generally regain the money (usually with interest) expended during the time required for developing, testing, and patenting.

Again referring to the survey made by NAM in 1947, and quoting from a summary of replies to the question, "How many U.S. patents have resulted from your research activities?"

The answers reveal that *many of the small manufacturers have patents which have resulted from their own research.* The survey showed that 27 of the smaller companies, those with sales under \$500,000 per annum, have 423 such patents, *i.e.*, an average of approximately 15 patents per company. Thirty-two firms with sales between \$500,000 and \$1,000,000 per annum reported 498 such patents, also an average of 15 per company; 57 companies with sales between \$1,000,000 and \$2,500,000 reported 979 such patents, an average of 17 per company; 76 companies with sales between \$2,500,000 and \$5,000,000 reported 2,282 such patents, an average of 30 per company. . . .

The importance of patents to the small manufacturer is illustrated by one answer stating: "Our business is a good example of a small manufacturing plant whose birth and growth have been almost wholly dependent on patent protection. Under such protection the business has been lucrative and gives steady employment; without such protection the business would never have been started."

² For other comments on patents see Chap. 9, How to Fulfill the Legal Requirements.

OUTSIDE SOURCES AND AIDS FOR RESEARCH

Assistance from College Laboratories: There are times when it becomes necessary for management to secure test results which are beyond the scope of their test facilities. Such test results can be obtained by finding a laboratory in a college where all or much of the necessary equipment is on hand. The facilities are usually willingly placed at the disposal of the company on a payment for time and work basis. Personnel to aid in performing the tests can be arranged through the college staff, the aid of students often being enlisted. Such cooperation between colleges and industry is desirable. Both are stronger when working together on the basis of giving and receiving worth-while information.

The college supplements its income and finds a means of providing subjects for interesting assignments to graduates or undergraduates for supervised study.

Industry benefits by finding a ready way of getting needed information and possibly an opportunity to acquaint a group of young men with at least one of its products. Usually these young men are potential users of the company's products at a later date.

The college scientist is quite likely to be a true scientist, held by his interest in the work and the feeling that he can do his best work there rather than in industrial pursuits. Quite a few create a healthy approach to new ideas and are good as sources for innovations.

Assistance from Commercial Laboratories: At other times there are problems to which only specialized laboratories can give aid or where there is a desire to go further in the development of a process which is well understood basically by some person in an especially equipped commercial laboratory. Such projects can be advantageously developed in these laboratories. They have well-developed apparatus and highly trained personnel. Such facilities may also be engaged by a group of companies interested in a common problem. This is a desirable procedure for small companies, especially when the project would require appreciable time and the aid of the highly trained personnel.

Quite frequently the laboratories have extensive practical experience and fully understand the commercial requirements constantly before management. This experience aids them in rapidly concluding an assignment.

Assistance from Consultants: In certain cases the services of a specialized consultant may be of great usefulness to the small plant. Especially does this occur when the development can be done by the plant research men

but requires guidance and supervision by someone who has definite experience in the special field of experimentation required.

All consultants charge fees, and all make a report. But there is a great difference among consultants. Some have had experience in one field and some in another. Quite a few solicit the research contract on the strength of their experience and then send a young engineer from their own office to "see the project through." By this means the company facilities are used partially by personnel from the consultant's office. This is a desirable arrangement only where the consultant's experience can be directly useful in solving the research project.

At all times the small plant should make sure that it will get true and practical consultant service which, if successful, will be worth its cost.

Assistance from Prospective Buyers or Users: When research work is done to benefit a relatively small group of users or possibly only one large user firm, it may well be that the researchers of the maker and the user of the desired product can be pooled to work out the project on the basis of a cooperative agreement.

Care should be taken that such an arrangement be worked out carefully in advance and especially in consideration of the future sales and profits to be derived.

SUMMATION ON TECHNICAL RESEARCH

Researchers as Weavers of Intricate Patterns: Research men are the weavers of intricate patterns. They continue to astonish their associates and compatriots with their ability to break with the past by improving the present and reaching for an even higher standard in the future. They are continually seeking to unlock the bolted and padlocked doors to nature's secrets. These treasures are here for mankind to use, but the best use cannot be achieved without learning to use them safely. Nature does not reveal them suddenly and before men are ready for them. Sometimes researchers have unlocked and made available some of these treasures too early. Others, as yet, have not been developed to a full usefulness for the progress which still has to be made toward a higher goal. Some inventions have been made a means to a selfish end. Others, unfortunately, have not been used for man's good. This was not the intent of nature, and it is unfortunate when misuse of her resources is permitted.

Researchers are always striving to improve upon the present. They are never satisfied with their own work and that of others. Through their work the advance of civilization moves slowly but surely onward.

The Need for Stability: Successful research results in new things (new products, new processes) for the small plant. But too many new things cause bewilderment. It is the better part of wisdom to avoid confusion by keeping research in proper balance with the other departments. Each department's normal functioning is essential to the company's health. If in a small plant enthusiasm for new developments from research allows the research department to outgrow the ability of other departments to absorb the new products, then the new products will suffer and research has been wasted.

The need for balance and stable progress should not be forgotten. *Too much research should be avoided, just as it is most important that sufficient research be done.* This seems to be the essence of real, balanced research for the small plant.

CHAPTER 15

HOW TO GET BEST SALES

BY

ALFRED B. DEPASSE, *Sales Consultant*
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THE PLACE OF SALES

The market holds the key to small plant success, and sales management holds the key to the market. Neglect of this simple fact is one of the greatest causes of small plant failures, if indeed it is not the greatest cause.

There are few more widespread or seriously erroneous ideas among small plant operators than that the world will beat a path to the door of the builder of the better mousetrap. Today's mousetrap is mass produced, and the techniques of mass selling are required to bring it to markets spread over the face of a great nation. The manufacturer must carefully choose his channels of distribution, select and train his selling organization, and plan his promotion and merchandising among many other necessary selling activities. The display position the retailer gives the product on his counter can mean several hundred per cent difference in the sales volume during the display period. Of no less importance is the attention the jobber gives the particular mousetrap in his voluminous catalogue.

It is the function of the sales manager to *determine, interpret, and actually create the wants of the market*, and then it is his responsibility to see that those wants are *profitably filled from the production of the plant* he represents and not from his competitors' lines. On all too many occasions, a new or growing company creates a demand for a product but not for its own brand, which must be made the first and last thought in all selling.

¹ The Worcester Chamber of Commerce has pioneered a consulting service for the 650 manufacturing firms of Worcester, most of them in the small plant group. The services cover advice on selling, production, transportation, and foreign trade. The author is the sales consultant of this organization.

COMMON MISTAKES AND WHERE TO GET
INFORMATION

Rather than concentrating on ways to satisfy the wants of the market, rather than considering his sales approach, the manager of the small plant frequently becomes completely absorbed in the intricacies or qualities of his product. The manufacturer of an automotive accessory was not the least bit unusual in this respect. His product possessed several qualities far superior to those of his competitors: Durability, fire resistance, cleanability were all proudly pointed to. Style and price, however, were the important market appeals for this class of product. The former was mediocre in the new unit, and the latter was necessarily exorbitant. As if such neglect of the wants of the market was not sufficient to discourage sales, the commission offered sales agents was wholly inadequate. It was too small to attract experienced men and insufficient as an incentive for the intensive effort needed from any less experienced men.

No fundamental fact of business is of greater importance or significance to the small manufacturer than that his plant operation can be justified—and prosper—only according to its ability to profitably satisfy the wants of the market. "Consumption," as Adam Smith said, "is the sole end and purpose of all production." Every technique of sales management is based on this fundamental, an awareness of which would result in much greater success for 90 per cent of all small plants.

While the problems of small plant sales management are more difficult today than at any previous time, the sources of management assistance are equally greater.

An entirely plausible story is told about the manufacturer who spent \$5,000 on a research study that was available at the cost of a 3-cent stamp. The *U.S. Department of Commerce*² distributes through its regional offices numerous small business aids of great value to sales management. Excellent sales studies and industry reports are available at little or no cost. No small manufacturer should neglect this source.

The best sales-management thinking and experiences are covered by such *professional publications* as *Sales Management*, *Industrial Marketing*, *Printers' Ink*, *Tell*, and *Advertising & Selling*. Small firms profit from the surveys, check lists, merchandising, and promotion plans described in these journals. For small subscription fees, plant operators can, in effect, expand their sales-management staffs.

Professional selling and marketing *associations* represent other inexpen-

² See Bibliography for detailed list.

sive means for the sales manager of the small plant to broaden his background. Through sales executives' clubs of National Sales Executives, many such men have acquired selling ideas from sales leaders whom they would otherwise have never seen or heard. Through regional and local conferences and clinics small plant operators in Worcester and other communities have had the opportunity to check and improve their own selling techniques.

Under a new type of program, small plant operators are free to consult a professional management-engineering staff maintained by a local *chamber of commerce* or, as in the case of Vermont, a state organization. The sales consultant on such a staff is available for advice without fee on any sales-management problem that may develop for a particular small manufacturer.

Finally there are the *business schools* of many universities, which frequently offer management assistance through their faculty and student body. *Trade associations*, too, offer invaluable assistance to companies operating in their particular field.

A few sample pages, showing how to analyze a product for its sales possibilities, are presented below. They were taken from U.S. Department of Commerce, Economic Series No. 53:

A CHECK LIST TO HELP YOU INTRODUCE YOUR NEW INDUSTRIAL PRODUCTS

Section I.—Is Your New Product Salable?

The *easy* way to "define" the market for your new product is to say something like "Every farmer, manufacturer, and transportation company needs something like this," or "Every city government in the country can save money using my product."

That is the *easy* way to convince yourself there is a big demand for what you want to sell. But it is never true! Markets don't happen that way! Every product's potential sales—even to a particular class of customers like airlines or building contractors—are limited by a number of factors. Competition is one factor, but there are others.

For example, every product's potential is limited by what the product itself is good for, by whether it can be produced efficiently enough to sell at a reasonable price, and by a variety of factors (reciprocal sales, for instance) over which you, as manufacturer or distributor, may have little control. It is natural to say that all industry needs your belt dressing or burglar alarm or burr remover, but some can't use it, others already have it, others can't afford it, others have always bought from a competitor.

So enthusiastic generalizations as to the size, location, or character of the market for your product are dangerous. The only sound, sensible way to determine the possible market for a product is to test, secure the facts, and consider all the factors involved.

First find out whether the product (designed and produced as you will design and produce it) is salable to typical, representative prospects. This section Section I, will help you take this step.

Check List on General Salability

1. What do you call your new product?.....
2. What will it probably be called by the trades?.....
3. What is it for?.....
4. In what sense is it new? (Is it a minor adaptation of something you are now making, a "standard" product newly added to your line, something new to this country but in use abroad, an entirely new technical development, or what?)
5. Have you thought out exactly why you want to introduce this new product? Are you trying to
 - a. Start a new business?.....
 - b. Start a new line?.....
 - c. Round out your present line?.....
 - d. Expand sales in your present market?.....
 - e. Invade an entirely new market (for example, the export market)?
 - f. Get better or more even use of your men and machinery?
 - g. Meet a new need of your customers?.....
 - h. Exploit an available patent?.....
 - i. Keep up with changing technological trends in your field?
 - j. Counter a new competitive product?.....
 - k. Do something else? (Describe).....
6. Has your product had controlled laboratory or engineering tests to show up performance? (For example, if it is a new container, has it received breakage tests in a tumbling machine?)
7. Have you fully pretested your product under actual service conditions? Do you know how it will stand up in service?
8. If products of this general type are already on the market, what features in them appeal most to users and distributors? Rank in order of importance:
 - a. Capacity or rate of output
 - b. Cost of operation
 - c. Durability

- d.* Ease of repair _____
- e.* Price _____
- f.* Service and maintenance _____
- g.* Compactness _____
- h.* Appearance and finish _____
- i.* Trade-in value _____
- j.* Multipurpose usefulness _____
- k.* Safety features _____
- l.* Ease and simplicity of operation _____
- m.* Other (describe) _____
- _____
- 9. What features do present products of this type have which users and distributors don't like? (For example, some plant engineers are biased against certain products; some lumberjacks prefer full polished axes; some cabinetmakers object to single-twist-type wood bits; some machine-tool users prefer to buy tools finished in other colors than the standard gray.)
.....
- 10. How many of these good points and bad points in present products of this type are also found in your new product?
 - a.* Good points (list them)
.....
 - b.* Bad points (list them)
.....
- 11. If there are no products like your new product on the market today, why, in brief, do you think the new product fills a need that is not now being taken care of?
.....
- 12. Have you fully pretested your product from the point of view of customer response? Have you tried it out on the type of people who will use it? _____
- 13. Are you satisfied that your new product is the kind of product the market wants or can be taught to want? (If so, write down why in a couple of sentences.)
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THE TASKS OF SALES MANAGEMENT

There have been many listings of the duties of the sales manager, but in their extensive divisions and breakdowns they frequently obscure the essen-

tial unity of these functions. As complex as the sales manager's duties are, they may be classed under four headings:

1. Knowing the market
2. Building the organization to sell that market
3. Providing aids to that organization's selling
4. Controlling and coordinating these activities

KNOWING THE MARKET³

All sound sales planning is based on a thorough knowledge of the market to be sold. This applies whether the company or product is well established or is about to be launched. *Population and industry shifts*, changing buying habits and preferences, and the new strategy of *competitors* are some of the vitally important factors that can mean the difference between profit and loss to any small manufacturer.

Nine out of ten new *products* fail. Beyond this millions of dollars are lost by small plants on developing new products which never reach the selling stage and, more important, never should have gone beyond the preliminary study stage, simply because the products did not fill the needs of any market.

As an approach to knowing the market, the small plant operator should endeavor to (1) define the *market*, (2) define its *wants*, (3) define its *habits*. He should have a good idea of the size, location, and characteristics of the market, and he should determine not only the product preferences of the market but also its awareness of those preferred features in his own product. Finally, he could profit by knowing where the potential customers prefer to buy, what size purchases they make, what related items they buy, what publications they read, etc.

Defining the Market

In any program of market analysis, consideration should be given not only to the present main sources of business but to underdeveloped or completely untapped sources of business as well. New markets may be uncovered for existing markets. Among the many benefits the small manufacturer may derive from having defined his market well is the ability to prepare more accurate sales budgets, to set more equitable sales quotas, to offer a

³ U.S. Department of Commerce, *Outline for Making Surveys—Commercial, Industrial, Community, Regional, Local*. Washington, D.C., Government Printing Office, 1944.

more intelligent system of incentives to salesmen, and to plan a more stabilized production and financing program.

The small plant usually cannot support a staff of even one full-time market analyst, but it can and must afford to have its sales manager devote some time to this subject. Every sales manager has *four ready sources of market information*: internal records, published material, those who sell his products, and those who buy. Each source can furnish valuable material at a cost well within the range of any small plant.

Three steps in any market-analysis program are

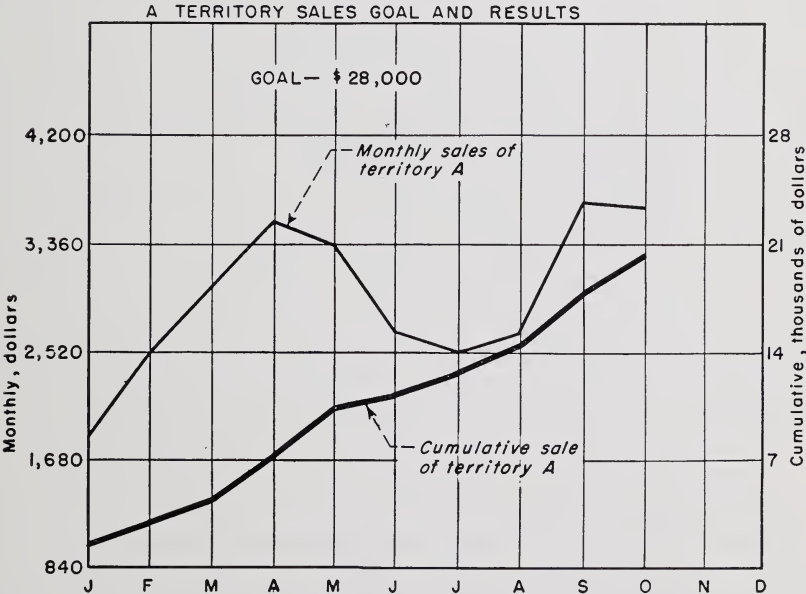
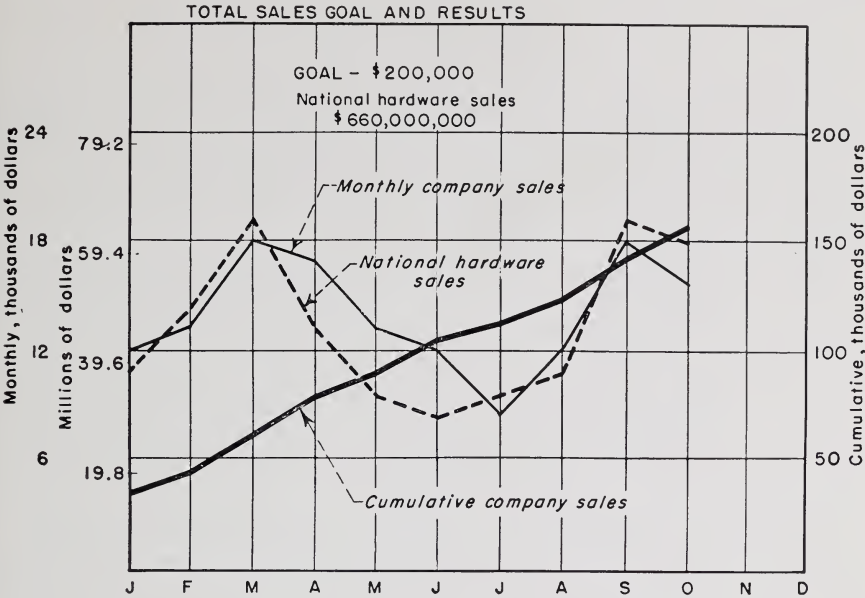
1. Determine sales for each control unit
2. Determine potential business for each control unit
3. Determine relative sales performances and trends.

A small manufacturer of hand tools began an analysis of his market by dividing all business among his sales territories, which then became his "control units." After determining that hardware sales were indicators of his own business activity, he estimated the percentage of national hardware sales made in each of his territories. The information on which these estimates were made was readily available: (1) A trade publication furnished hardware sales volume per jobber salesman, (2) a directory listed hardware jobbers and salesmen by states, and (3) published figures showed retail hardware sales by states. As a final step the manufacturer prepared a simple line graph for each of his 13 territories and one for his national figures. The values given to spaces on individual graphs varied according to the particular territory's percentage quota of national sales. Thus if one territory had a quota equal to 10 per cent of the national figure, one space on the former's graph would represent \$1,000 and on the latter's graph \$10,000. In addition to this information, each graph had a line indicating the cumulative volume of business. Finally the national chart included the published figures on national hardware sales.

All these graphs were easily maintained by the sales manager's secretary. Thus valuable data were secured, and badly needed managerial manpower was conserved. After a 9 months' period, for example, the sales manager could determine the progress of a particular territory by a glance at two simple graphs that analyzed for him what previously would have been recorded in a maze of nearly 400 separate figures. Samples of these charts are shown on the opposite page.

These graphs clearly indicated the trend of national sales in relation to the general business indicator, and they actually uncovered a serious decline in the sales of one territory in relation to the over-all company picture. This latter problem was promptly investigated, and the situation corrected.

SALES CONTROL CHARTS OF A SMALL HAND-TOOL MANUFACTURER



The charts are maintained to show: (1) the relation of total company sales to the business indicator chosen as best suited for control purposes; (2) the relation between sales in individual territories and total company sales; (3) the actual fulfillment of the quotas set in the sales plans. Kept up to date for each territory as a loose-leaf record, the charts furnish quick, reliable, and convincing information.

Defining Market Wants

It is of no help to know there are fish in the pond when there is no bait with which to catch the fish. It is of no help to know the extent of a market when there is no product the market wants. The small manufacturer must therefore know whether the market really wants the product as now designed or would want it if certain changes were made.

The need for accurately defining the wants of the market is continuous. That knowledge serves as a guide in preparation of selling presentations and in promotion, merchandising, product development, etc.

Two simple questions are the basis for any *inquiry into market wants*: (1) What does or might it want, and (2) does it know whether you have what it wants? One product may cost less to operate than another, but it will not be a factor in increased sales of the former unless the potential customers are convinced of that economy.

Three possible methods for the small manufacturer to use in making a *study of market wants or product preferences* are (1) *asking*—buyers, sellers, users; (2) *looking*—in trade shows, outlets, publications; and (3) *testing*—in trade shows and outlets. The small plant operator, his sales manager, or his sales force, individually or as a group, can make the inquiry.

Distributors and retailers are interested in new business possibilities, and they usually know a lot more about the marketability of a particular line than the small plant operator. Potential users will have opinions on a product, but sellers know how to make them buy.

The manufacturer will profit by seeking the opinion of sellers either through personal contact or through sales representatives. Salesmen and manufacturers' agents should be encouraged and trained to sound out the market and to report to the home office both favorable and unfavorable comments on company products, in existence or planned.

Trade shows are often ideal places to ascertain both customer and agent or distributor reactions to product features. A study of competitive lines displayed at regular outlets and a systematic study of competitive advertising can be equally fruitful sources of information on product preferences.

No amount of study and comment, however, will replace *actual sales tests* of a new design or product. Here, when the benefits of preliminary studies have been applied to the product, the small plant operator takes his first actual selling step. Higher or lower prices, packaging, merchandising, or other changes may be indicated before the company is too deeply committed to other policies. The best laid plan in sales as in engineering usually has some "bugs" to be removed after the first tests are run.

A bicycle-accessory manufacturer recently planned a new product. He

could not afford, however, to risk heavy tooling costs on an article that was an unknown market quantity except for the certain fact that no similar product had ever before succeeded. His first step was to survey potential sellers and users. Some minor design changes were indicated, merchandising problems were uncovered, and possible acceptance was indicated.

A small advertisement and display at a regional trade show followed. The reaction was better than anticipated, and small but significant orders resulted in addition to requests for selling rights. With the information derived from these extremely economical tests, the manufacturer developed a promotion and selling program which resulted in excellent national sales.

A contrary, but nevertheless valuable, result occurred from a user and dealer study concerning a set of special instruments. The manufacturer had produced a large quantity of the article and was preparing to devote an important part of his shop to its production. The study uncovered a number of serious design weaknesses that caused further production plans to be dropped before additional expenditures were made.

Another company as a result of market testing uncovered a sales-design fault in a machine attachment. The design was corrected, and favorable sales followed.

Defining Market Habits

The constantly shifting sands of the market are nowhere more evident than in the drugstore. There are many persons who cannot recall when the name of these stores was a reasonably accurate description of the products they sold. Today stockings and sodas are sold in drugstores, shirts and umbrellas in cigar stores. The small plant operator who does not watch these trends and plan accordingly is going to suffer to the benefit of his more alert competitor.

Impulse buying, related item selling, brand consciousness all have a very vital meaning to every manufacturer; packaging, dealer aids, advertising are all affected. Markups and commissions differ from one channel of distribution to another, and being in the wrong channel may be as disastrous as being on the wrong track.

Two simple ways for the small manufacturer to *determine these trends* are (1) question and *study the outlets* and (2) *study* trade, selling, and general business *papers*. Let managers of these outlets and the writers for these publications serve, in effect, as members of the small plant operator's staff.

These are methods which have been used with success by many small plants. They will provide a good and needed knowledge of the market, and they can be used by the small plant operator who hopes to build his enterprise on a sound foundation.

More elaborate techniques of market analysis are of necessity frequently used by larger firms, but in most instances such methods are beyond both the resources and requirements of the small plant.

REGULAR SALES EXECUTIVES CLUB MEETINGS



An excellent means for getting together to discuss sales trends and distributions. (Courtesy of Worcester Chamber of Commerce.)

BUILDING THE SALES ORGANIZATION

Many men may be required to sell what one man might produce with the machines he tends. Obviously very few companies have either the resources or the product line capable of supporting such an organization. If too many men were engaged exclusively in the sale of almost any one company's product, the unit selling cost would be so high that the article would be priced out of the market.

High production is made possible only by good selling. Mass production is made possible only by mass selling at a low unit cost. This is the problem of the selling organization—volume sales at the lowest unit cost.

Mass selling may have to be organized for even the smallest plant if its product is to be distributed from mass-production lines and machines to individual consumers, and there are astoundingly many who mass produce

and need mass selling. From the concentrated production floor of one small plant its products had to be sold to the scattered consuming area of 3 million square miles. The product, now sold by 30,000 men, is a wire product. One man tends six machines with an average production of 500 pieces per minute, totaling 180,000 pieces per hour and 1,440,000 pieces each day. Two dozen agents and big distributors with 300 salesmen reach 10,000 outlets in the 48 states. With an estimated average sale of 100 pieces, 14,400 individual sales must be made every day over the entire nation to keep six small machines in operation. This is the scope of one small mass-selling operation.

The selection of a selling organization must be determined by more than simply its capacity for physical distribution, however. Just as the foregoing machines created a useful product form, so the selling organization further increased the product's usefulness. The articles were at the particular *place* at the particular *time* desired by the customer. Only then was *ownership* transferred to the consumer and the distribution process completed. Only through the buyer's ownership at the needed time and place were the articles ready for use or consumption, which as we have seen was the very end purpose of production. Ability to assure these three factors is the second consideration in the selection of a certain type of selling organization.

To assure distribution of the sort described and needed entails not only known costs but considerable risk. Goods must not only be *shipped*. They must be *stored* and *financed*. They may represent a loss if prices decline, if new designs or styles are put on the market. The selling organization must be alert to such developments. It must be alert to *competitive tactics*, and it must *minimize credit losses*. For these reasons most companies share their selling-distributing problem with wholesalers, independent retailers, chains, mail-order houses, and other selling agencies. These groups together with the company sales force compose the sales organization.

Before considering a particular selling organization, the small manufacturer should appreciate the vast scope of the distribution process. He should consider it as a whole with its costs and risks, its need and its benefits. All parts require careful selection, good training, and proper incentives. The major divisions of the selling organization requiring this attention are (1) the noncompany organization (channels of distribution) and (2) the company force.

SELECTING AND USING THE CHANNELS OF DISTRIBUTION

There are six basic combinations of selling organizations, six channels of distribution, six ways that the small plant operator may share his selling

costs and risks. Each method offers certain benefits more important in one industry and even for one product than for another.

The final selection of a selling organization rests with the particular manufacturer. With a knowledge of the market and an understanding of the fundamental characteristics and functions of distribution channels a much wiser selection will be made.

The six principal channels are these:

- 1. Manufacturer—Agent—Wholesaler—Retailer—Consumer
- 2. Manufacturer —Wholesaler—Retailer—Consumer
- 3. Manufacturer—Agent —Retailer—Consumer
- 4. Manufacturer —Retailer—Consumer
- 5. Manufacturer—Agent —Consumer
- 6. Manufacturer —Consumer

It is not always obvious from the start which channel would be best and should be chosen. But by analysis one can determine fairly well which combination of selling organizations should be considered most seriously, tried, and developed as the distribution system.

The following pages indicate the technique of checking that might be followed. They were taken from a *Check List for the Introduction of New Consumer Products*, published by the U.S. Department of Commerce, Economic Series No. 41.

CHECK LIST: CHANNELS OF DISTRIBUTION

- 1. Through what channel or channels are consumers accustomed to buying products of this kind?
 - a. From retail stores? _____
 - b. By mail from catalogue? _____
 - c. From house-to-house salesmen or demonstrators? ... _____
 - d. From service outlets (e.g., plumbers, automobile- or radio-repair shops)? _____
 - e. Others (e.g., direct from ads, book clubs, or cooperatives) _____
 -
- 2. Put this question to yourself and your friends and associates: "If *you* were going to buy a product like this, from what outlets would you prefer to make your purchase?" ..
.....
.....
- 3. If the method by which you expect to get the product into consumers' hands is not the same as the preferences stated above, what is the reason for the difference?

- a. Difficulty in securing dealers?
 - b. Does not follow pattern used for other products in the line?
 - c. Requires too much time to secure market coverage? ..
 - d. Competition too great?
 - e. Any other?
4. Are the reasons indicated in question 3 important enough to justify your decision to market your product in a way that does not coincide with the way consumers prefer to buy products of this kind?
5. Assuming that you will distribute your product through retailers, what kind of retail stores will sell it (*e.g.*, grocers, department stores, hardware stores, gift shops, or what)?
6. How much do you know about the operations of this type of retailer?
- a. How many such stores are there?
 - b. Where are they located?
 - c. What percentage of total sales volume in this field is done by
 - i. Independent stores?
 - ii. Corporate chains?
 - iii. Voluntary chains?
 - iv. Manufacturer-owned stores?
 - v. Consumer cooperatives?
 - vi. Others?
 - d. On what basis do your competitors usually sell products of this kind to retailers?
 - i. Exclusive franchise?
 - ii. Selected distribution?
 - iii. General distribution?
 - e. If on an exclusive basis, do dealers expect to be protected against competition from other retail outlets in their town or neighborhood?
 - f. Can you sell your product through both independent and chain stores?
 - g. At what seasons of the year will retailers be most likely to buy your product?

7. What is the best and easiest method of selling to these retailers?
 - a. Through established wholesalers or jobbers?
 - b. Through exclusive distributors?
 - c. Through your own factory-controlled sales force?....
 - d. Through a combination of the above?.....
 - e. Others?
8. How many wholesalers, jobbers, or other intermediate distributing organizations are there which can logically handle your product?
9. What is the best and easiest method of selling to them?
 - a. Through salesmen, demonstrators, or technical personnel working out of the factory?
 - b. Through branch offices of the factory?
 - c. Through brokers, sales agents, or others?
 - d. Do you know the wholesale trade practices or discounts, allowances, billings, credit, and warehousing which you will have to meet?
10. If products like yours are usually installed or have a service guarantee, will you conform?
11. If so, have you arranged for the service and installation through the distributive channels?

Competition

It is obvious, of course, that a major portion of the success or failure you achieve with your product will depend on the competition you meet—its size, extent, and intelligence.

In very rare instances, products have been introduced which have been so revolutionary, so extremely important, or so clearly an improvement over everything previously in existence that it was possible to say, truly, the product had no competition. One might point to the development of a successful means of making a chocolate coating adhere to ice cream (as in the original Eskimo Pie) or the development of nylon yarn as typical examples of products which had no competition initially. Yet even in these cases elements of competition soon developed.

The chances of developing a new product which the public needs and wants and which is completely and wholly different from any other product are extremely small, and therefore it can be accepted that your new product will enter a competitive market in which it will have to win the battle for orders against stiff, intelligent competition. It will have to be made better or cost less or be sold more aggressively and intelligently—preferably all three—in order to win a profitable share of the market.

Since these things are true, it is apparent that *you must know your competition* and must be able to beat it or meet it in the market place. So, while the questions in this part of the check list are few and simple, it will pay you to *know* the answers to them as surely as you know the answers to the other questions in this list.

Check List: Competition

1. What competition will your product face? List:
-
-
-
-

Manufacturers' Agents

Manufacturers' agents are of particular importance to small plant operators. They can minimize the manufacturer's risks of mass selling, reduce the unit cost of sales, and in many instances provide the only answer to the small plant's need for a widespread selling organization. These agents provide a ready-made, often technically trained sales force that is *compensated only for results achieved*. Thus the risk of building, training, and maintaining a company force is greatly alleviated.

A major reason for the agent's ability to function in place of a company force is the fact that he *carries a complete line of noncompeting products of several manufacturers*. In this manner, the cost of selling is borne by a number of products. If many small plants with a limited volume or line had to absorb all such costs, their products would be priced out of the market.

Naturally, the independent nature of the operations of these men presents a *difficulty of control* for the manufacturer. He cannot secure, with the ease that would be the case with a company force, reports on the number of calls made or sales approach used. Neither can he have full attention given his own product where others must be carried. These problems do not alter, however, the important position held by manufacturers' agents; indeed the sales manager may actually reduce such difficulties by careful selection, written contracts, proper incentives, and internal controls.

Manufacturers' agents may be located through classified advertisements in trade papers and metropolitan newspapers. They may be found through chambers of commerce and some trade associations and by the recommendations of the people to whom they sell; department-store buyers and wholesalers are usually well informed in this respect.

The selection of a manufacturers' agent should preferably be based on sound knowledge. These factors should be always investigated: credit rating,

accounts and products now handled, class of accounts sold, territory covered, number of men traveling, etc. References should be checked, and only those agents selected who sell related, noncompeting lines to the outlets the manufacturer wishes to reach. The agent who sells to suburban estates, mill-supply houses, and sporting-goods dealers is clearly poorly organized. (Clear, that is, to almost all except the man who actually did exactly that.)

Manufacturers' agents may *sell directly to wholesalers or retailers or consumers and sometimes to a combination of these*. Their sales directly to users occur mostly in the industrial field, where the value of the unit sale is high and where the engineering and technical background of many agents is of great value. Their commission ranges from 2 to 15 per cent, dependent on product and other factors.

Selling Agents

In the same general category as manufacturers' agents is the selling agent. In contrast to the former, the *selling agent usually sells the entire output of a plant*. Such an agency relieves the manufacturer of practically all sales responsibilities. He provides the selling force and the sales management. This type of selling is increasingly popular with small plant operators who wish to devote all their attention to production problems. These agents mostly get 5 to 10 per cent commission on the value of sales obtained.

Careful selection and contract protection are very important where selling agencies are used. The manufacturer using such an organization puts all his selling "eggs in one basket." The agency's sales effort has to succeed if the plant it represents is to succeed. In a recent instance a small plant selling the juvenile market secured the services of an excellent agency. Sales were mediocre, however, since, as was later determined, nearly all the agency's efforts were devoted to other more profitable articles. The fault was not entirely the agency's, but the plant owner learned that he had to exercise great care before forfeiting so great a measure of control over so important a management activity.

Wholesalers

Thirty per cent of all manufacturers' sales are made through wholesalers, who, in turn, move 20 per cent on to retailers and 8 per cent direct to industrial consumers. Wholesalers offer the small plant operator his second opportunity to share his selling costs and risks with others.

Wholesalers mostly ask for discounts ranging from 20 to 40 per cent of the retail price. Low unit receipts from sales to these establishments are off-

set by reduced unit selling costs for the manufacturer. Wholesalers are relatively good credit risks. They carry a bigger inventory in the areas they serve than most small manufacturers could afford.

Wholesalers usually possess good market knowledge, have established market contacts and a ready-made sales force, all of which would be costly for the small plant to develop. The cost of their selling is spread over the products of many manufacturers, and the normal credit risk of such sales is borne by these merchants rather than by the usually less well-informed manufacturer. Nearly all wholesalers sell through retailers, agents, or other outlets to whom they must give part of the larger discounts they require.

Most manufacturers have been increasingly concerned by several *problems involving the use of wholesalers*. The large number of often competing products sold through one wholesaler frequently cause some lines to be neglected, and in any event more profitable lines understandably receive greater attention. More than this, however, wholesalers, like manufacturers and retailers, generally decreased their aggressiveness and selling efficiency during the period of a sellers' market.

As when dealing with manufacturers' agents, however, the manufacturer's *internal controls* provide a closer check on relative selling efficiency. *Missionary salesmen* cooperating with the wholesalers and the use of *promotion material* have both aided in overcoming some of these difficulties. The small plant operator to be most assured of good representation, however, should select his wholesalers with care.

For the reasons already shown and despite the problems mentioned, wholesalers are of considerable importance to small plant operators. Generally, where the cost of retail or consumer sales is high (small unit purchases, scattered purchases, a narrow line, keen competition) or where the manufacturer's resources are limited, wholesalers should be used.

A strong wholesale representation was recently established by a screw-machine shop that had developed a garden tool to offset a more difficult jobbing market. The tool was placed on a trial basis in a few selected hardware stores. Proved market interest was then used as an incentive to induce the best wholesaler supplying these stores to handle the new item. In one area at a time an aggressive force was developed until half the plant's capacity was devoted to the new product.

Retailers

One would not expect it, but it is true that approximately two-thirds of the sales made by the biggest mail-order house, Sears, Roebuck, come from its retail outlets. Retailers, with their men, facilities, and methods, perform

many functions in a way that is especially hard for the small plant operator to beat by any direct-selling technique.

The three big functions of retailing are to *SELL*, to *SERVE*, to *STOCK*. Retailers sell at a place convenient to the buyer. They support much local promotion. Unit sales are very small, but the cost of such sales is spread over hundreds and even thousands of different products.

Retailers deliver to the buyers their small purchases at their stores. They bear the credit of many sales, and they offer many special services from home delivery to interior-decorating advice. These services are costly, but they build sales for the small manufacturer whose product they handle.

A hundred dealers mean a hundred inventories that the small manufacturer does not have to carry. This cost and the risk of anticipating market wants are borne by the retailer. Sizes, styles, and models; related goods, demand and impulse items far beyond the production range of any one small manufacturer are held in retail stock for the buyers' convenience.

Of the different classes of retailers, the *independents* are the most important. They account for 86 per cent of all durable-goods retail sales and 75 per cent of the nondurable-goods sales. The independent usually has a good knowledge of the local market and, what is especially important to the small plant operator, is usually not concerned with selling under a private brand name.

A decision to sell direct to dealers should be based upon the ability of the manufacturer and his product to support that method of distribution. The direct-selling organization removes the wholesaler markup and assumes the cost and risk of (1) heavier inventory, (2) smaller orders, (3) increased accounting, (4) poorer credits, (5) exclusive sales attention to one product or line, (6) bigger company organization, and (7) jobber competition. These last factors naturally are of less importance where the product value is high, where technical advice to the dealer is important, or where dealers are so well concentrated as to reduce the cost of reaching them.

The successful use of the direct-to-retailer sales technique is presently being experienced by the small manufacturer of a high-cost, moderate-turnover sporting-goods article. Brand-name competition is keen, and competitors also sell a high-turnover, high-profit accessory to the main line. Manufacturers' agents for this company now sell direct to retailers instead of to wholesalers. Part of the wholesalers' former markup is now offered to retailers as an added incentive. New office equipment has simplified the problem of handling 10,000 separate retail accounts. Another portion of the saved wholesale markup has been put into heavier advertising and better district supervision. By these means and by more thorough record keeping one small plant is improving and guarding its position against "name" competition.

Chain Stores

Small plant production and selling for the mail-order houses and the chain stores have a very important angle which deserves to be given special consideration. By the manufacture of a staple article, for which contracts can be made for a year's supply at periodic deliveries, the small plant can level off its production and employment schedules so as to produce the article evenly throughout the year or especially during the dull manufacturing period. Thus is reduced the necessity of extensive layoffs, and the best and hence most desirable workers can be retained on chain-store and mail-order-house merchandise until business increases again. A stockpile is created then for subsequent delivery.

Also many standard and nationally known brands of articles can be produced and sold under the company's brand name and at the same time for mail-order houses and chain stores with little or no change in the product. Testing of such items, bearing the trade names of mail-order houses, often reveals them to be identical with the article sold by the manufacturer, under his own trade name, through the regular dealers and retailers of that commodity. The only change necessary is the mail-order-house label on the article instead of the trade name of the maker whose trade-named article is usually maintained at a slightly higher selling price.

In other words the same article can be made and sold by the maker and the mail-order house, provided they are offered under different labels and trade names and at different prices. Thus the manufacturer can continue, in what otherwise would be a dull and layoff season, in the manufacture of his standard trade-named article with no change in employees or manufacturing methods other than to stamp the product with a chain-store trade name and put a chain-store label instead of his own on the box.

The market knowledge and merchandising and promotion techniques of chains are generally superior to those of the independents. The chain practically removes the credit-risk factor and through volume purchases greatly reduces the cost of the unit sales. The volume sales and thereby the possible volume production, if it can be sold to chain-store business, is particularly important to the small plant operator. With a minimum company sales force, business may develop to utilize all or a major portion of the small plant production facilities.

While competition is keen, the importance of the chain-store market is growing, as is proved by recent figures concerning the ten largest variety chains.

A practice followed by a producer of molded plastic goods reserves chains as house accounts and divides all other business by territories to manufac-

turers' agents. In this manner close contact is maintained with accounts which represent a production base for the shop and more independence is possible in negotiating with agents.

Department Stores

Department stores generally present the same advantages and problems to the small plant as do the chains. They are more usually sold individually, however, although the buying syndicates can offer one channel to many stores. New products are often cooperatively promoted and sold in one store in each of several key cities with results indicative of prospects elsewhere. A successful promotion of this nature is a definite sales aid in reaching new outlets.

Mail-order Houses

Just as small retailers may be selling adjuncts to large manufacturers, so small plants are frequently manufacturing adjuncts to large mail-order houses. The tie is often closer in the latter instances, because one mail-order house may take the entire output of many small plants.

Mail-order houses represent very large volume, good credit, sound merchandising, and highly competitive buying. The low-cost producer can build a valuable production base on this type of customer. A hand-tool manufacturer is presently selling a large mail-order house, while wisely a separate department is building wholesaler and dealer sales to strengthen the over-all company sales performance.

Direct Selling

In volume, the least important method of distribution is direct selling. Only 3.9 per cent of all manufacturer sales are made in this manner. Two aspects of this type distribution of most interest to small manufacturers, however, are direct-mail selling and the use of independent salesmen.

Successful direct-mail selling depends on the right product, prospects, and promotion. The product or products should represent a high unit sale value and in all probability should be of a specialty nature.

Since a 2 to 5 per cent response must usually be considered good or excellent in direct-mail selling, special attention should be given to the prospect list. If the article to be sold is a luxury article, then all low-income families are poor prospects and only higher bracket families should be approached. The *Department of Commerce* prints sources of direct-mail lists, and of course, magazine subscribers are the prospects for mail-order sales in the pages of the periodicals.

The cost, risk, and reward of direct-mail selling is apparent in the case of the small manufacturer of a special kitchen utensil. After many unsuccessful experiences with direct-mail selling a 3-inch, \$550 advertisement in a homemaking magazine produced \$4,000 in sales and requests from jobbers and dealers to handle the article. Today this very small company spends about \$10,000 a year on this kind of promotion with excellent results.

Independent salesmen are mostly used to sell specialty items ranging from advertising calendars to fire extinguishers. The small plant operator welcomes the opportunity to sell direct with a sales force that is paid only for business received. As might be expected, many of these men are untrained and their turnover rate is high. With a good product and adequate financial incentive, however, many of these men have proved valuable selling representatives for numerous small firms.

HOW TO CREATE A GOOD DISTRIBUTION SYSTEM

Most small plant operators neglect their noncompany organizations. They may select the proper channel of distribution but the wrong members of that channel. It may be proper to use jobbers to distribute a certain product, but not every jobber will sell that product with the same success.

Selection of the proper wholesalers or dealers can be of as great importance as the selection of the proper company salesmen. All parts of the distributing organization deserve careful selection, sales training, and proper incentives.

Selection of Outlets

The three key factors to be determined in selecting members of the non-company organization are (1) *interest*, (2) *ability*, and (3) *coverage*.

The sales manager should look for and try to create an active jobber interest in his product before turning the line over to any one organization of this kind. Once this interest has been established, every possible reference should be investigated as to the outlet's ability and market coverage. Banks, local chambers of commerce, and credit houses are usual sources of such information, but the outlet's own clients and customers can furnish valuable opinions that should not be overlooked.

These observations apply to the selection of any members of the non-company organization, but they are nowhere more important than in the selection of manufacturers' agents. In a recent typical experience, a small plant operator nearly lost his business while untrained friends served as his agents. Later these men were replaced by agents selling allied lines to the

accounts desired by this manufacturer. Only then did his sales rise 350 per cent in a 6 months' period.

Training of Dealers

If any member of the distribution system is to be properly selected, he already should have general product knowledge and sales ability. It is up to the manufacturer, however, to furnish *specific product knowledge* and it is to his advantage to furnish a sales presentation of this product. Agent, wholesaler, and retailer will all make better sales with such knowledge.

Correspondence, printed matter, or company men may be used to impart company training. The fundamentals of training, however, should be similar for the company and noncompany force and will be discussed later.

Incentives for Dealers

The noncompany components of the selling organization are motivated by four things:

1. Profitability of the line
2. Ease of selling the line
3. Clear-cut company objectives
4. Fair policy in attaining these objectives.

The sporting-goods manufacturer already mentioned increased the profitability of his line to retailers by passing on to them part of the savings from the eliminated wholesaler markup. The automobile-accessory manufacturer referred to at the outset limited the profitability of his line to his independent salesmen by allowing only a very small discount. The first company is experiencing record sales, and the latter is nearly defunct.

One manufacturer places a reorder card near the bottom of his cartons. Thus dealers set up by wholesalers have only to drop the card in a mailbox to assure a replenished stock. Handy packages with sales appeal and brand-name promotion all make selling easier and products more attractive to sellers.

A well-defined selling objective supported by a fair company policy will almost always create more dealer enthusiasm. One small cosmetic producer built a large sales volume by just such a policy. Sales were to be developed in one area at a time. Sales were only through barber supply houses and barbers. No competition would develop from other sources, and the fair-trade price was a guarantee against "cutthroat" pricing practices. The plan and policy created confidence and sales.

BUILDING THE COMPANY SALES FORCE

The selection and training of a good man for the small company sales force are more important for the small than for the large company. The bigger company can afford an occasional poor selection, but that one poor selection may mean a 20 to 100 per cent nonproducing force for the small plant.

The cost of breaking in a new man has been estimated from \$750 to \$5,000. As important as these figures may be to the little concern, it is the loss of many thousands of dollars in sales and good will that is staggering.

Once the need for a man has been decided upon, there are six man-power sources that any small manufacturer can tap. These are

1. Selling and buying contacts
2. Educational institutions
3. Present employees
4. Advertisements
5. Employment agencies
6. Sales executives' clubs and other business groups.

One general recommendation is to tap as many sources as possible. Only a percentage of job applicants are well suited to fill any particular job. Many applicants means a better chance of finding that "best" percentage.

Selling and buying contacts often know good men who are seeking a change. Frequently, too, their own employees are good job prospects. An arms manufacturer secured salesmen from his retailers. These men were customer-conscious, knew dealer problems, understood the product, and had actual selling experience.

Most educational institutions have placement bureaus. Many small firms have product- and policy-knowledgeable personnel who would welcome a sales opportunity. Employment agencies can usually furnish a number of prospects, charging the prospect a fee rather than the company and then only after the placement has been made.

A classified advertisement in trade or general publications will almost always produce applicants. Many sales executives' clubs, chambers of commerce, and trade associations know of well-qualified salesmen. The small plant operator can use any or all of these recruiting sources at little or no cost to himself.

The problem of personnel selection is simply to get the right man for the right job. Careful selection will mean less turnover and more success. Just another question during the interview or a job reference checked may mean a hundred new accounts instead of a lost territory.

Job Specifications for Sales Jobs

The use of job specifications is as sound procedure in selecting men as the use of material specifications is in selecting a steel alloy.

Few sales jobs are limited to just selling. Many require the preparation of some reports. Therefore, selling ability, though the key requirement for any sales job, is but one of several important requirements.

These are the main areas in which a salesman must work: (1) *sales*, (2) *service*, (3) *research*, (4) *planning*, and (5) *general business*. Because of his staff limitations the last three fields are especially important to the small manufacturer. A research-minded salesman will produce valuable product and market information that would be more difficult to acquire elsewhere.

A study of company requirements in each of the above areas will indicate the necessary job qualifications. For example, under "sales" one company may have a technical product sold over a wide area and requiring top-executive and engineering approval before purchases are made. The first factor would make an engineering degree or perhaps just a technical background an important job qualification. The second factor would probably require fairly heavy travel and would eliminate many men with strong home attachments. The third factor would make executive and age characteristics more important.

Some progressive small plants prepare a *rating chart* for use after an interview. These charts may rate the applicant by points or simply poor, fair, good, or excellent on each of several points. Thus, "first impression" may be good, "age" may be excellent (thirty-five to forty if that is best), "education" may be good (college, but not technical if that is important).

Generally these factors are significant in salesman selection. As in the case of education, one type may be of more importance than another, but each point in the salesman's background should be evaluated in relation to the job for which he is being considered.

First impression

Age

Education

Business experience (in sales, in same industry, etc.)

Family background

Job stability

Organizations (member, officership)

Speech (clear, intelligent, public speaking)

Loyalty (comments on previous employers and associates)

Apparent selling ability

Future possibilities.

A more detailed application should be prepared by the prospect, and job references should be checked. *Sales Management Magazine* and *Dartnell Corporation* publish application blanks which may be secured at a reasonable charge.

No assortment of personal assets will make up for a lack of energetic selling ability. Aptitude tests prepared by various organizations, while definitely not infallible, are often helpful in evaluating this characteristic.

Training of Company Sales Personnel

Most small plant operators would be happy if they knew how to increase their sales by 20 to 80 per cent. This is exactly what a good sales-training program can do. Furthermore, such a program is within the financial and staff capacity of small plants.

Sales training is a matter of providing salesmen with an "organized" approach to their selling problems and then getting them to use that approach. For such a program to be successful, it should take into consideration (1) job requirements, (2) job difficulties, (3) learning problems.

A study of job requirements and job difficulties will suggest subjects for the training program. Specific difficulties in any selling job may number as high as 200, and their consideration will probably take up a large part of any training effort.

Sales difficulties may concern personal appearance, product knowledge, call planning, paper work, selling approach, etc. Once a job analysis has been completed, the small plant sales manager should prepare a list of these problems based on his own experience, that of his men, and that of others where possible.

To be effective, *a training program must teach*. The teaching quality is to such a program what light is to a film projection. The weaker they are the less value they have.

Salesmen will learn more if they are interested, if they can use the senses of sight and touch as well as hearing, and if they can participate in the training effort. One final caution: only a percentage of what is taught will be remembered—training is a continuous process.

Most best selling techniques can be divided into these categories:

- Preapproach
- Approach
- Presentation
- Close
- Follow-up.

The sales manager and his men should constantly seek to improve on these parts of their selling efforts. The entire selling effort builds up to the point where the actual sale is made. Every successful company has its stories of how a certain presentation or the change of one sentence in the approach increased sales by 40, 60, or 100 per cent.

It requires no large organization to prepare a strong selling message, and yet it is on this vital point that many small companies fail.

By *preapproach* is meant the preparations for meeting the customer, learning everything possible about him: his wants, his possible objections, what information should be sought in the first interview, etc.

The problem in the *approach* is to capture the buyer's attention and interest. Since his wants or benefits are his interest, these should be appealed to without delay. "Would you like to reduce your handling costs 20 per cent" is more interesting to the buyer than "I represent Jones & Company, the largest hand-truck manufacturers in the East." In the words of Elmer Wheeler, "Sell the sizzle, not the steak."

In the *presentation* the product should be described in the buyer's language, authority for its performance figures cited, and evidence of its benefits to previous buyers shown.

A *demonstration* of the harmlessness and cleanliness of carbon dioxide may be effectively shown by discharging that type of fire extinguisher in an office or on the salesman's clothes. With many products, it is the demonstration that sells.

The presentation of most products can be dramatized in such a way that many prospects' questions are effectively and concisely answered. These are some of the techniques the large and small plants have found useful in successful presentations.

Many salesmen simply neglect to ask for an order. It is therefore very important that any sales-training effort cover this technique of making an effective close. While experience is the best guide as to when to close, there are certain clues during most selling-buying discussions. The salesman may make a trial close by asking, for example, "Which model do you prefer?" Other times a customer will give a clue when he asks, "How soon can you make delivery?"

Every sales expert recommends that the salesman leave as promptly as possible after the sale is completed. If the sale is not made, an opening should be made for a call at some other time. If the sale is made, a follow-up should be planned, since most business is repeat business.

Elaborate *sales-training programs* are usually beyond the resources of small plants, and even if they could be financed, they would be uneconomical because of the small number of people who might benefit. However, through (1) *meetings*, (2) *correspondence*, (3) *field trips*, and (4) *selling*

courses and texts, the small plant can provide valuable and inexpensive sales training.

One New England shop that increased its sales 800 per cent holds sales meetings twice a month. The salesmen review with the shop owner their sales successes and failures, analyzing the approaches and presentations that were made. During a meeting of this sort a "we can save you" approach was developed that increased one type of business 50 per cent.

On another occasion, one man related his success in lining up five new accounts. While he was commended for the skill he had used, he was nevertheless reminded that he had not secured the actual orders from those accounts which still left an opening for competitors.

Today not even the smallest company need sell with untrained men. Sales executives' clubs throughout the nation conduct their own *sales courses* or *clinics* or sponsor *instruction in local colleges*. Whether Jack Lacy clinics or college courses, the sales-training expense is borne among many men, so that individual expenses are very low. Sales training pays big dividends. It is vitally needed by small plants, and it is today within their reach. As the photograph on page 381 indicates, attendance at training meetings is excellent.

How to Pay Sales Personnel

To assure profitable sales, a compensation plan should meet the needs and wants of both salesmen and sales management. The former should have the assurance of a stable, livable income and a reward for increased effectiveness. Management should have a plan that is easy to administer and that permits good control of the salesmen's work—achieving quotas, opening new accounts, developing market information, etc.

In developing a sound compensation plan, however, the small plant has several unique problems that deserve careful attention. Limited production, limited finances, or a relatively unknown company name may make a certain commission plan necessary or may dictate a stronger bonus plan.

In summary, a sales compensation plan should meet these needs of management and men.

| <i>Management</i> | | <i>Men</i> |
|-------------------|---|------------------|
| Control | + | security |
| simplicity | = | profitable sales |
| | | incentive |

Small plants selecting such a plan must also consider their limitations: (1) potential, (2) financial, (3) name value.

Straight Salary: This kind of compensation rates excellent as to simplicity and security. It rates good on control and very poor on incentive. It may

result in complacency on the part of the salesman, however, and lost sales for management.

Straight Commission: This method rates excellent on simplicity and ranges from poor to excellent on security. It rates fair on incentive and very poor on control. Straight commission men frequently slow down when a certain volume is attained; they are weak on reports and relatively unconcerned with general company policy. Commissions may be excessive at one time and very poor at another time.

This is, however, the most popular form of compensation used by small plants largely because of its simplicity and lack of out-of-pocket expense before sales are received.

Salary and Commission: This system rates excellent on simplicity and security and very well on control and incentive. This plan is becoming more popular. A typical example of its use was by a small manufacturer of electrical products. From his market studies and experience he set a \$100,000 yearly quota. His man received a salary based on reaching 80 per cent of the quota and a commission on sales above that figure.

Salary and Bonus: This rates excellent on security, incentive, and control and can rate well on simplicity. One small plant using this system builds bonus payments on (1) quota attainment, (2) new accounts, (3) size of accounts, (4) credit picture, (5) interest in company.

This type of plan has helped the small manufacturer by developing for him new and profitable accounts, by helping establish the company name, and by reducing his salary-investment risk. One of the most important advantages of small plant sales management is in the nonfinancial incentives it can offer. Because it is an inherent advantage it should be developed; because its cost is negligible it can be turned into profits.

Giving Recognition

A common complaint in large companies is that employees lose their identity as individuals. All sorts of human-relations programs and decentralization plans have been worked out to combat the problem. Small plants, because of the close contact between management and worker, sales management and salesmen, can give the salesmen the recognition they need. And recognition is a particularly important need of salesmen.

Let the salesman know that management knows and is interested in what he does. Especially recognize his successes, but do not overlook his problems. Seek *his* opinion on his successful methods and on ways of overcoming the selling problems in his territory. This latter will strengthen his bond with

the company, help overcome his problems, and provide the company with valuable selling information.

Small plants often improve their sales and their relations with their men by annual conferences. Many companies hold weekly or semimonthly local sales meetings. Others rely on regular correspondence; some make use of frequent field trips. Regardless of the method, successful companies *recognize* their salesmen as individuals and as partners in success.

ONE OF THE REGULAR SALES TRAINING MEETINGS AT
WORCESTER, MASS.



Arranged by the Chamber of Commerce, these meetings familiarize the sales forces of the community with the latest thoughts and techniques developed in their field. They are open to all comers and attendance is excellent. (*Courtesy of Worcester Chamber of Commerce.*)

Most small companies have a big potential of growth that offers its members the opportunity of parallel growth. If its salesmen are selected, as they should be, with a view toward their personal development, then the opportunity represented in an expanding company will have a powerful appeal.

Recognition together with the incentive of *opportunity* can reduce turnover, increase selling effectiveness, and create a foundation for company development. The techniques of participation in company plans and occasional attendance at regional sales executive conferences and local meetings with the company president or sales manager are used by many companies to show their interest in their men and the *opportunity* offered for executive development.

The third major nonfinancial incentive for salesmen is *confidence* in the company and management for which they work. Small plants that have clear-cut plans for development, that show the methods they are using to achieve their objectives, and finally, that check their own progress and that

of their men create the deserved confidence of their men in their own and their companies' future.

Annual or more frequent conferences, reports on sales and plant expansion, fair and regularly checked quotas are common practices that create *confidence*.

Together with a sound compensation plan, *recognition*, *opportunity*, and *confidence* build enthusiasm and sales.

SALES TOOLS AND THEIR USE

Up to date distribution has as its tools advertising, visual aids, etc., just as modern production has automatic lathes and presses. The successful plant recognizes the need of its organization for modern distribution tools as much as for mass-production tools.

These selling tools may be classed under five headings:

Visual aids

Packages

Advertisements

Point-of-sale material

Miscellaneous.

Visual Aids: These are used in recognition of the simple fact that what is seen as well as heard will make a stronger impression. The machinery salesman whose manual includes a graph of the savings made for other buyers of his product will sell more than the man who must simply quote statistics. The garment salesman who can show colored slides of models wearing his product will do more business than the man who must rely solely on samples.

Visual aids may be in the form of sales manuals, color slides, motion pictures, charts, or sales kits. Generally, they should be brief, dramatic, and support points the salesman makes in his presentation.

Packaging: One small manufacturer doubled his sales by the simple expedient of using a better quality cellophane package with a revised insert. As in this case, it is often possible to improve sales considerably through the use of more attractive packaging.

The size of a package can make handling easier, increase the value of the unit sale, or create a more conspicuous merchandising unit. Customers buy a package of half a dozen glasses or light bulbs at a time instead of one, two, or three as formerly. They buy a full set of kitchen utensils instead of one or two units.

Some companies include reorder cards in their large cartons so that dealers can automatically reorder when their stock reaches a certain level. Supermarkets use packages that can be readily stamped with a price which can be seen by the checker. Plastic packages often serve a second purpose when the original contents have been used.

Advertising: In point of expenditures advertising is the most important tool of mass distribution. When properly used, it performs several steps and, less often, all the steps required to make a sale.

While the best advertising is usually produced by professionals, the sales manager should be as familiar with this and the other mass-distribution tools as the production manager is with his mass-production tools.

Three ways by which small plants can increase the effectiveness of their advertising are the following: (1) *Plan* it carefully; (2) *aim it directly* at the potential market; (3) *appeal* to the readers' interest.

Planned advertising is usually continuous. Several small ads produce better results than one small one. A definite theme based on the product's sales appeal to a known market means more sales at no greater cost.

The plant with a regional or specialized market should be certain that the publication used concentrates on that particular market. Advertising that covers California when the market is in North Carolina is wasted. Magazines, newspapers, and radio stations will all provide information on the markets they cover.

As with all selling, advertising appeals should be those which interest potential buyers rather than the plant manager or engineer.

Jobbers, dealers, plant executives, etc., are interested in profit. Consumers are interested in profit, safety, prestige, health, happiness, comfort, etc. A small well-pump manufacturer saw his sales jump when he stopped trying to sell his valve and piston and began to sell the *convenience* they offered.

To produce good results, an advertisement has to attract attention, arouse interest, create desire, and get action. It should be simple and accurate. No one is present with the buyer to explain the points that are missed in the advertisement he is reading.

Sales expenses should include a definite figure for the cost of this tool. Some plants use a fixed amount per unit; others take a percentage of their expected sales; all should include it in their budgets.

Mail Advertising: This medium is widely used by small plants, and several important aspects of its use should be considered here.

A mailing list is like a magazine subscription list. To the extent it does

not represent potential buyers, it is useless. These lists should be kept current. There are many firms which sell special mailing lists, and the U.S. Department of Commerce furnishes other sources.

As with other advertising, direct mail must be timed. In rural areas, for example, spending is much greater after the crops are harvested.

When a campaign is planned, many small plants wisely send out *test mailings* to 10 or 20 per cent of the list before the total mailing expenditure is rushed.

Offers and return cards on envelopes often help to develop definite leads for salesmen and increase the percentage of mail replies.

Point of Sale Material: Included are broadsides, displays, or posters. Preferably they should be prepared by professionals, and certainly they should be prepared in cooperation with dealers and jobbers. Small companies have thousands of dollars worth of these dealer aids thrown out simply because the needs of the dealer had not been considered.

Point of sale material is the dealer's visual aid in selling. It should supplement and assist his presentation of the manufacturer's product.

Miscellaneous Aids: Among these helps to distribution, *new-product news releases* are of particular interest to small plants. They supplement rather than supplant other selling techniques.

A new-product news release is one of the least expensive, most effective, and yet most neglected selling techniques available to small plants. The requirements are merely the submission of a picture together with a brief factual description of the new product and its uses to the editors of publications reaching the desired market.

One five-man shop sent out several such releases which were picked up by additional publications until a reader audience of 27 million persons was reached. The cost was ten prints of one photograph and copies of a three-paragraph story.

Another shop developed from such releases 350 leading industrial accounts and at the same time uncovered several new uses for the product. New business, new representation, and new product uses are all common results.

Technical articles for professional and trade journals and activity in trade associations will help develop the prestige of a small company.

Trade shows—special weeks such as Fire Prevention Week—are occasions for the small manufacturer to put forth an additional selling effort.

In summary, best distribution is largely made possible through the use of special tools. Many small companies remain small because of the neglect of these tools; others like the Gold Seal Company, of Glass Wax fame, have

grown from one-man operations to multimillion dollar businesses through the wise use of these selling tools.

SALES CONTROLS AND COORDINATION

Manufacturers' distribution costs generally range in the small plant from 5 to 30 per cent of their total expenses. Yet cost of sales is one of the most neglected phases of sales management. This is an especially vital problem to small plants because of their usually limited line of products and their relatively limited resources.

More profitable sales result from (1) increased volume of sales and (2) lower distribution costs and lower prices, not necessarily matched by increased production.

The three basic techniques for developing better sales are knowing the market, building the organization to sell the market, and providing aids to that organization's selling. All these, when properly used also decrease selling costs. Beyond these techniques, however, is needed the actual analysis of sales costs by territories, class of customers, products, and selling functions.

Many firms are finding that a large number of their customers are unprofitable because of the smallness of their orders in relation to the cost of selling them. By increasing the selling effort exerted on more profitable customers, both sales and profits have improved.

Small plants are finding *joint or cooperative selling* one answer to the problem of limited lines. In New England recently two garment manufacturers pooled their selling efforts as did a group of metalworking plants and likewise a farm-equipment group. Separately these companies could not maintain needed salesmen and promotion in the territories they wished to reach. Together, they were able to finance more intensive and successful selling.

Another approach to the problem supporting increased sales effort was the acceptance by a woodworking-product manufacturer of a distributorship for an allied product. With the expanded line, better sales resulted and the unit cost of selling went down.

Better sales always result where *close cooperation exists among sales, engineering, and production*. Through joint conferences and the interchange of well-chosen data, many small plants greatly increase their effectiveness.

Production performance, shipments, etc., have a vital bearing on customer relations. Sales forecasts are the basis for production planning.

Product development and improvement should be a continuous process in the smallest plant. Market wants determined by the sales manager are often the engineer's guide to product design. Varied instances of such successful cooperation are (1) the development of a fur-brushing machine,

the need for which was uncovered by a company salesman; (2) the development of a new design construction tool, the demand for which was first indicated by a jobber; and (3) the design of a kitchen utensil, the idea for which was uncovered by the sales manager in a perusal of the *Official Gazette* of the Patent Office.

At negligible expense, small plants can maintain simple yet essential *records* for the control of their sales efforts. Salesmen's *call reports*, showing also daily mileage and miscellaneous expenses, increase calls and encourage planned routing of visits and economy in general expenditures. Customer records of business volume represented, number of salesmen's calls, and payment records assure follow-up of accounts and reduction of credit risks. A dollar spent on good records can save hundreds in sales, expenses, and poor credits.

SUMMATION ON SELLING

The objective of small plant selling is solely to fill the wants of the market profitably, and it is the sales function of management to create where necessary, to determine and fill these wants.

Small plant operators, because of staff limitations, should make greater use of various publications and organizations to broaden their sales background and sources of information.

Sound sales management must rest on the base of thorough market knowledge. Greater use of the simple expedients of studying related advertising and questioning customers and selling groups can provide valuable market information. Market testing and the use of continuing records add to the inexpensive methods of improving market knowledge.

More production is made possible only by more sales. Sales on a large scale require an adequate distributing organization for the smallest company.

Because small company finances or product lines can seldom support the exclusive services of a mass distributing organization, some of the expense involved must be shared among many firms and products.

The company sales force must share with wholesalers, retail chains, etc., the problems of increasing sales. All these groups require proper incentives and training if good sales are to result. Small plants can provide most of these incentives and much of the training.

Just as modern production has its tools, so modern distribution has its own tools. These are visual aids, packaging, advertising, dealer aids, etc. By the proper use of these tools much greater and less expensive sales will result.

While mass sales may be the ultimate objective in the operation of any small plant, sales activities must be coordinated with those of production,

engineering, and finance. Cost-reduction techniques must be applied to distribution. Sales efforts must be related to production facilities, and production departments must schedule their activities in accordance with sales forecasts. Product development and design should be continuous and based on market wants as determined by the sales manager.

Best sales result only from best sales management.

CHAPTER 16

HOW TO DO AND USE ACCOUNTING

BY

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ACCOUNTING AS AN AID TO MANAGEMENT

Essential Requirements: The accounting plan must provide effectively for the recording and controlling of financial transactions. It must, in addition, so control the cost-accounting system that a comparison of actual expenditures and the amounts of such expenditures absorbed in costs will be available each month. The accounting system therefore must (1) make feasible the preparation of monthly analytical balance sheets and statements of income, (2) provide continuous cost control and the means of locating the need for cost reduction, and (3) provide essential data for setting and checking selling prices.

Not so long ago the usual small business depended upon old-fashioned methods of bookkeeping which provided operating data only at the end of each year. During the year executive information was limited largely to details of accounts receivable, accounts payable, and cash in the bank, with an occasional look at the general ledger trial balance. Today, no business, irrespective of its size, can afford the luxury of such archaic accounting procedures.

Designing the System: The accounting system must be designed for the company that is going to use it. Attempts are sometimes made to install methods described in a textbook or used by some other business. This approach to the problem will usually end in failure to obtain the desired and expected results. Even companies engaged in the same line of business

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and of similar size may not have identical operating problems and hence identical accounting requirements. The fundamental accounting needs of these companies may be quite similar but the detail requirements will differ. Unnecessary clerical work and inadequate information are the usual results of using an accounting system which was designed for some other plant and not tailored to meet the problems of the specific company.

Simplicity and Effectiveness. When the installation of an accounting system is arranged for, the businessman invariably requests that the system be kept simple. No one recognizes the need of simplicity more than the experienced, well-trained accountant. But the concept of simplicity in a given instance may be one thing to the businessman and something very different to the accountant. Essentially the accounting system will be simple or complex, depending upon whether the operations of the business are simple or complex. *The accounting system must reflect the results of operations and the financial position of the company* from month to month in sufficient detail to tell the management what is going on. It must provide adequate accounting controls over the transactions to make sure that all income is accounted for and all expenditures are properly recorded. It must be sufficiently detailed to provide these essential requirements, or else it will not be doing its job. But the details necessary to do this effective and necessary job having been determined, the procedures and the books and records indicated should be carefully studied to make sure that no unnecessary details are allowed to creep in.

Accounting as a Management Tool: An effective accounting system may prove to be one of the most valuable tools in the management's kit. Good accounting will keep the management posted each month on (1) *the gain or loss* by classes of goods sold and (2) *the financial position* of the company. But good accounting will do much more. Probably the most important problem in every business, particularly in the small business, is that of maintaining a *proper balance between wages, prices, and profits*. Only through the intelligent use of good accounting information can management hope to reach sound conclusions in fixing policies in these important fields. Always present is the problem of deciding what price tag to hang on the goods produced by the company. While competition may to a great extent dictate selling prices, these competitive prices usually indicate some person's idea of costs excepting in periods of price demoralization.

Consequently, the individual company must provide accounting information to help the management decide (1) where to cut costs to live within the competitive income, (2) whether to change design of the product to bring it within the price structure, or (3) to what extent specific products

may safely be subsidized by other products in the line. And the effect of these decisions on current and long-range financing policies can be estimated only by reference to adequate accounting data.

THE ACCOUNTING SYSTEM

Chart of Accounts: A chart of accounts for a small business is illustrated in Form 1. Nine major account classifications are provided:

Assets:

1. Current assets
2. Fixed assets, intangibles, deferred charges

Liabilities:

3. Current liabilities
4. Valuation reserves
5. Fixed liabilities, capital stock and surplus

Income and expense:

6. Sales, deductions, cost of sales
7. Manufacturing burden
8. Commercial burden
9. Other income and charges.

CHART OF ACCOUNTS

| Assets | | 2. Fixed assets, intangibles, deferred charges: | |
|--------------------|---|---|--|
| 1. Current assets: | 100 Petty cash funds | 200 Land | |
| | 102 Cash in banks | 210 Buildings | |
| | 110 Accounts receivable—trade | 215 Reserve for depreciation | |
| | 111 Accounts receivable—other | 220 Machinery and equipment | |
| | 112 Notes receivable | 221 Reserve for depreciation | |
| | 122 Life insurance cash surrender value | 230 Autos and trucks | |
| | 140 Raw material A | 231 Reserve for depreciation | |
| | 141 Raw material B | 240 Office furniture and equipment | |
| | 142 Raw material C | 241 Reserve for depreciation | |
| | 143 Other direct materials | 280 Interest prepaid | |
| | 144 Packing materials | 281 Taxes prepaid | |
| | 145 Work in process | 284 Insurance prepaid | |
| | 146 Finished goods | | |
| | 147 Factory supplies | | |
| | 148 Fuel | | |
| | 149 Office supplies and postage | | |
| | | Liabilities | |
| | | 3. Current liabilities: | |
| | | 300 Accounts payable—trade | |
| | | 301 Accounts payable—other | |
| | | 302 Dividends declared | |

- 303 Social security taxes withheld
- 304 Federal income taxes withheld
- 306 Notes payable—banks
- 308 Notes payable—other
- 310 Salaries and wages accrued
- 311 Commissions accrued
- 312 Employees' vacations accrued
- 313 Social security taxes accrued
- 314 State and local taxes accrued
- 315 Provision for income taxes
- 316 Interest payable accrued
- 317 Compensation insurance accrued
- 318 Provision for bad debts
- 4. Valuation reserves:
 - 410 Reserves for contingencies
- 5. Fixed liabilities, capital stock and surplus:
 - 500 Long-term debt
 - 510 Capital stock preferred
 - 511 Capital stock common
 - 512 Capital surplus
 - 513 Earned surplus
 - 514 Profit and loss
- Income and expense
- 6. Sales, deductions, cost of sales:
 - 600 Sales
 - 610 Returns and allowances
 - 640 Commissions to agents or jobbers
 - 670 Manufacturing cost of sales
 - 680 Commercial cost of sales
 - 690 Material quantity variances
 - 691 Material price variances
 - 692 Labor variances
 - 693 Manufacturing burden variances
 - 694 Commercial burden variances
- 7. Manufacturing burden:
 - 700 Superintendence and foremen
 - 710 Departmental indirect labor
 - 711 Service labor
 - 720 Overtime and shift premiums
 - 721 Vacations and allowances
 - 722 Correcting defective work
 - 723 Pensions and pension plans
 - 724 Compensation insurance and accidents
- 725 Group insurance
- 726 Social security taxes
- 730 Fuel used
- 731 Power, light, and water
- 732 Indirect materials
- 734 General factory supplies
- 740 Motor truck expense
- 741 Transportation inward
- 743 Research and laboratory
- 744 Repairs and maintenance build-ings
- 745 Repairs and maintenance machin-ery
- 748 General factory expense
- 790 Insurance
- 792 Taxes
- 794 Depreciation
- 799 Burden clearing account
- 8. Commercial burden:
 - 800 Salesmen's compensation
 - 804 Sales traveling expense
 - 805 Sales auto expense
 - 811 Advertising
 - 818 Transportation outward
 - 819 Other selling expense
 - 860 Executive salaries
 - 861 Office salaries
 - 862 Professional services
 - 863 Executive traveling
 - 864 Office supplies and expense
 - 865 Company auto expense
 - 866 Postage
 - 867 Telephone and telegraph
 - 868 Subscriptions and dues
 - 869 Donations
 - 870 Bad debts
 - 873 Life-insurance premiums
 - 874 Social security taxes
 - 878 Other administrative expense
 - 899 Burden clearing account
- 9. Other income and charges:
 - 900 Cash discounts received
 - 901 Interest received
 - 905 Sundry sales and income
 - 910 Interest paid
 - 911 Cash discounts allowed
 - 912 Federal taxes on income

FORM 1

(Courtesy of Cooley & Marvin, Boston.)

An account symbol is composed of three digits. The first digit is the primary classification, combination of the first and second digits is the secondary classification, and three digits form the symbol of the specific account; for example, 1 indicates current assets, 10 cash, and 100 petty cash. Should a company wish to collect expenses by departments, this may be done readily by adding a department symbol to the basic account symbol; for example, 701.1 would be indirect labor for the department designated as number 1.

Books of Account

Regardless of size, every business needs four basic books of original entry: (1) cashbook, (2) voucher register, (3) sales book, (4) journal. Postings are made from these books of original entry to the accounts in the general ledger. In very small concerns all books of original entry may be contained in a single loose-leaf cover, which may also include the general ledger accounts. Large companies on the other hand may require subsidiary books to support not only the books of original entry but the general ledger as well.

General Ledger: The general ledger should provide a sheet for each account listed on the chart of accounts. These sheets should be arranged in a loose-leaf binder in the order indicated by the chart. Thus the chart becomes an index to the ledger.

Cashbook: The cashbook should be divided between (1) cash receipts and (2) cash disbursements. Sheets for both receipts and disbursements will usually require four columns in addition to space for the date, name, and posting reference. In the receipts section the columns will be headed (1) accounts receivable, (2) discounts, (3) sundry, (4) net cash. In the disbursement section the columns will be headed (1) accounts payable, (2) discounts, (3) sundry, (4) net cash. Each day when the entries have been made, all columns will be added to date and the excess of the amount in the net cash column in the receipts section over the net cash column total in the disbursements section will represent the cash balance in the bank and should be entered in pencil in the margin on the receipts side.

Voucher Register: When a purchase invoice has obtained final approval, it should be entered in the voucher register. The voucher register will therefore serve the dual purpose of purchase book and accounts-payable ledger. On the left side columns should be provided for the date, name of vendor, amount of the bill, and date paid. At the right, there should be columns

for as many classifications of purchases as may be needed to save time by posting column totals at the end of the month instead of individual items from the columns. When a bill is paid, the date of payment will be entered in the date-paid column. To determine the accounts payable in total and the balance owed to any individual vendor, it will be necessary simply to review the amounts which are not marked paid in the date-paid column. This simple procedure will eliminate the accounts-payable ledger.

Sales Book: A modern simple billing system should be used, and postings made from carbon copies of these customers' invoices direct to the accounts-receivable accounts. These duplicate invoices will be collected in a loose-leaf binder and analyzed daily by classes of sales. At the end of the month the sales will be credited to the appropriate sales accounts to offset the debits to accounts receivable. Hence the duplicate customers' invoices will serve as the sales book.

Journal: The journal is provided for entries which do not belong in the cashbook, the voucher register, or the sales book. Because these entries will be small in number, they will usually be made in longhand. Where a continuously controlled cost system is used which requires certain repetitive monthly entries such as provision for depreciation, writing off prepaid insurance, setting up accrued taxes, a columnar journal may well be used. This journal would have space at the left for the account symbols and names and at the right two columns, debit and credit, for each of the 12 months of the year. The account names and symbols would be written only once at the beginning of the year, and at the end of each month the appropriate figures would be entered in the monthly columns. Postings would be made direct from this journal to the general ledger.

Control Accounts: Control accounts are provided in the general ledger when it is found advisable to operate detail accounts in any classification. This procedure has two advantages: (1) It makes the accounting work more flexible, allowing one person to work on the detail accounts while another is working on the general ledger, and (2) it simplifies the balancing and proving work at the end of the month because each group of subsidiary accounts can be proved against the appropriate control accounts.

Examples of control accounts are accounts receivable, trade, and accounts payable, trade. If a company has many customers, a subsidiary accounts-receivable ledger should be maintained containing an account for each customer. The sum of all net balances in this accounts-receivable ledger should always equal the net balance in the accounts-receivable-trade account in the general ledger. Likewise the sum of all unpaid balances in

the voucher register total column should always equal the net balance in accounts-payable-trade in the general ledger.

Order Writing and Billing

In the office of a small plant order writing and billing will usually be handled by the same clerks. The customer's order should never be allowed to leave the office. If the goods are to be shipped from stock, a shipping order will be prepared for the shipping department. If the goods are to be manufactured, an appropriate manufacturing order will be prepared. But in all cases the customer's order will be retained in the office together with copies of the shipping order or the manufacturing order.

Billing and order writing should usually be done by typewriter equipped with appropriate billing attachments. Duplicate customers' invoices will be retained as the sales-book copy. If the line of products is relatively limited or if shipments are usually made from stock, the customer's invoice, the shipping order, and the sales-book copy may all be prepared at a single writing at the time the order is received. When the shipping-order copy is returned to the office, indicating that shipment has been made, the original will be removed from the file and sent to the customer as the invoice. This plan will be found highly satisfactory where it applies, but in many small companies it will be too inflexible and should be discarded in favor of independent preparation of both manufacturing and shipping orders and the customers' invoices.

Modern duplicating procedure should be considered if several copies are needed.

Accounting Personnel

Minimum required accounting personnel consists of (1) chief accountant, (2) cost accountant, (3) order-writing and billing clerk. The chief accountant keeps the general books and supervises the office. The cost accountant handles cost- and production-control work. The order-writing and billing clerk performs all duties indicated by that title. These employees may be men or women, depending upon local circumstances. Both chief accountant and cost accountant should have higher accounting training. It is not enough that the chief accountant shall be a good bookkeeper. Keeping books is a mechanical process, while *accounting is concerned with interpreting the results* shown by the books and records, considering their import against a background of the business operations, and analyzing them for management use and guidance. Cost work in a small plant can be reduced to a mechani-

cal procedure, but if it is, the results will probably not be worth the cost of obtaining them. Interpretive judgment enters so largely into industrial cost work that sound accounting training on the part of the person handling it is simply a must if information of management value is to be obtained.

The Professional Accountant and His Services

Every business, irrespective of its size, should have the regular services of a professional certified public accountant. Obviously the certified public accountant should be retained *to review the operating results and financial position* at the end of each fiscal year and present his report following this examination. His assistance in the preparation of tax returns and other governmental reports will also usually be found of real value. But there are many other ways in which the professional certified public accountant can serve effectively. These include the installation or revision of accounting and cost systems, consultation work with respect to interpreting operating and financial results at periodic intervals during the year, preparing operating budgets, setting up adequate systems of internal control and other accounting safeguards, and many kindred activities. The intent here is not to elaborate on particular phases of services but simply to point out and emphasize the importance of a continuous professional accounting connection.

THE COST SYSTEM

Type of System: Basically there are two types of cost systems: (1) *job order* and (2) *standard*. Usually the job-order system will be used in job shops only. Even in a job shop if the goods are not made to the customer's special specifications but may be supplied to other customers on special orders, a modified form of standard-cost system will frequently be found to apply. Fundamentally a cost system will be expected to (1) show the *calculated or anticipated cost* of all products by cost elements; (2) provide *comparisons* of the anticipated cost with actual results and the reasons for any differences; (3) reflect the *effectiveness of the utilization* of all cost elements including material, labor, burden, and plant capacity; (4) provide a *measurement* of departmental performances against accepted standards. A standard-cost system will usually be found to meet best these essential cost-accounting requirements of the small business. Furthermore a standard-cost system should cost less to maintain than a job-order or so-called actual-cost system.

The cost system should provide the normal costs of regularly manufac-

tured products over a period of several years and the anticipated cost of products which may have been added to the line recently or which have a considerable style factor. Pending the development of scientific standards, reasonable estimates should be prepared and controlled through the accounting-control procedure. The standard product costs and the underlying cost standards will provide the management with continuous yardsticks for measuring operations and determining upon production and sales policies.

Classification of Costs: All costs should be segregated into the three basic elements of (1) direct material, (2) direct labor, and (3) burden. And this classification must be maintained uniformly throughout the accounting work and on the cost cards in calculating the cost of specific products.

Direct material will consist of all materials which form a part of the completed product and which can be directly included in the costs of specific products.

Direct labor will include all labor which enters directly into producing the product and can be directly included in calculating its cost.

Burden will include all expenses accumulated in the burden accounts shown in sections 7 and 8 of the chart of accounts and is divided into (1) manufacturing burden and (2) commercial burden.

Manufacturing burden will include all expenses and costs of manufacturing other than direct material and direct labor.

The commercial burden is composed of selling and administrative expense.

Costs of Specific Products: A cost card is illustrated in Form 2. One of these cards will be prepared to show the *standard or predetermined cost* of each article in the line. These costs of specific products will provide (1) the fundamental data for determining or checking selling prices and (2) the costs to use in calculating the cost of sales for the monthly statement of profit and loss. All entries on this card will reflect standard amounts, not actual quantities used or the actual time consumed.

The material-quantity standards will usually be calculated from the manufacturing specifications. Adequate provision for waste should be made. Material prices should be determined by considering experience and anticipated price trends.

Labor-cost standards should be developed by operations preferably from time studies. If time studies are not available, then the best estimates should be used although they will be poor substitutes.

Manufacturing burden will be included by applying the standard burden unit rate or rates to the direct labor or on such other basis as may be determined.

COST CARD

STYLE NO. _____

DESCRIPTION

COST PER

ORDER NO. _____

DATE _____

| MATERIAL | QUAN. | PRICE | AMOUNT | QUAN. | PRICE | AMOUNT |
|---------------------------------|-------|-------|--------|-------|-------|--------|
| Lumber | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Finishing material | | | | | | |
| Upholstering material | | | | | | |
| Hardware | | | | | | |
| | | | | | | |
| | | | | | | |
| TOTAL MATERIAL | | | | | | |
| LABOR AND BURDEN | LABOR | % | BURDEN | LABOR | % | BURDEN |
| Mill room | | | | | | |
| Machine and cabinet | | | | | | |
| Finishing | | | | | | |
| Upholstering | | | | | | |
| Plating | | | | | | |
| Packing | | | | | | |
| | | | | | | |
| TOTAL LABOR AND BURDEN | | | | | | |
| Summary Material | | | | | | |
| Labor | | | | | | |
| Burden | | | | | | |
| TOTAL FACTORY COSTS | | | | | | |
| Commercial expense | | | | | | |
| Rate | | | | | | |
| Amount | | | | | | |
| TOTAL COST | | | | | | |
| Add in deductions | | | | | | |
| TOTAL COST AND SALES DEDUCTIONS | | | | | | |
| SELLING PRICE | | | | | | |
| PROFIT | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

FORM 2

(Courtesy of Cooley & Marvin, Boston.)

Although the cost card indicates the use of individual departmental burden rates, many small companies use a single rate for the entire plant.

Commercial burden cost will be obtained by multiplying the total factory cost by the standard rate determined for commercial burden.

The cost standards and the resulting standard costs of products should be changed only when the old standards cease to be representative. In general *there are four basic reasons for changing the standards*: (1) Material specifications change, (2) method of manufacturing changes, (3) material costs change substantially and semipermanently, (4) basic wage rates change substantially and semipermanently.

Standards and standard costs should never be changed for temporary or minor fluctuations irrespective of their size. Too frequent adjustment can easily ruin the value of the standards and reduce them to sets of figures without significance as actual costs or standard costs.

Control of Costs

Form 3 illustrates the cost-control procedure. First there are the *primary expenditures* for material, labor, and burden. These primary expenditures result in the production of finished products which are costed at standard cost as shown by the product-cost cards. The accounting system must show what happens costwise in this transformation and why. For this purpose cost filters in the form of *cost-variance accounts* are provided. These cost variance-accounts are (1) material-quantity variances, (2) material-price variances, (3) labor variances, (4) manufacturing-burden variances, (5) commercial-burden variances.

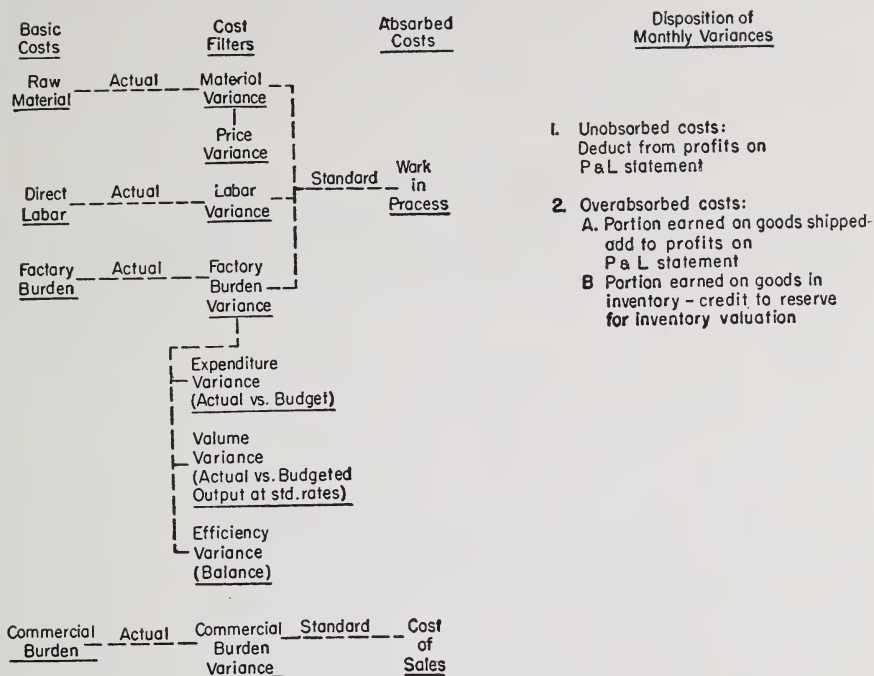
These variance accounts are charged with actual cost and credited with standard or absorbed cost. The balances remaining in each account will show, plus or minus, how closely the results of operations compare with the predetermined standards.

Material Variances: Raw materials used will be priced at actual cost, and the total for the month transferred from the appropriate inventory accounts to material-quantity variances. The standard cost of these materials will be transferred from material-quantity variances to work in process.

Material-price variances may be determined by costing the classified actual materials used during the month at the difference between purchase and standard prices. This total should be transferred from material-quantity variances to material-price variances.

Labor Variances: Total actual direct labor for the month both paid and accrued will be charged to labor variances and credited to salaries and wages

COST-CONTROL STRUCTURE



FORM 3

(Courtesy of Cooley & Marvin, Boston.)

accrued. The amount of labor absorbed at standard rates will be transferred from labor variances to work in process.

Manufacturing-burden Variances: At the end of each month the net balances in the manufacturing-burden accounts will be credited to the burden clearing account and debited to manufacturing-burden variances. Burden absorbed on production will be credited to burden variances and debited to work in process. This absorbed burden will be obtained by multiplying the absorbed or standard direct labor of the month by the standard-burden rate.

Commercial-burden Variances: At the end of the month the sum of all net balances in the administrative and selling expense accounts will be credited to the commercial-burden-clearing account and charged to commercial-burden variances. The burden absorbed will be transferred from variances to commercial cost of sales.

Top management should receive a prompt analysis of all cost variances

at the end of each month. These cost variances or cost filters are the stop-and-go signals for those who stand at the helm of the business. They will show what phases of the business are operating on schedule, what divisions are floundering, how much and why.

Stores Control

Adequate control of physical stores is a basic essential for every business. Stock rooms should be provided for all raw materials, supplies, and finished goods. These stores should be made the definite responsibility of specific persons, and no one else should be admitted without the knowledge of those in charge. *Perpetual-inventory records* by quantities should usually be maintained for all materials. A definite part of the inventory should be counted each day and reported to the perpetual-inventory clerk so that all stock will be counted in this way at least once each year. *Material delivered to work in process* should be reported daily on bills of material delivered or on requisitions. These daily reports will serve a dual purpose. They will (1) provide information showing balances of stock on hand and (2) serve as the basis for transferring the cost of material used from the raw-material-inventory accounts to the work-in-process accounts. If any materials are carried in *small quantities* or if they are used infrequently, perpetual-inventory records should be eliminated and *monthly inventories* substituted for efficient yet practical inventory control.

Work in Process and Finished Goods

Raw materials will be carried in the accounts *at actual cost*, while *work in process and finished goods* will be carried *at standard cost*. Any differences found to exist between the actual and the standard costs will be filtered out through the cost-variance accounts. The variance accounts make unnecessary a division of the work-in-process account into the three cost elements of material, labor, and burden for purposes of cost control. All work placed in process will remain at standard cost in a single work-in-process account until the cost of the completed product is transferred to finished-goods account or to cost of sales. Many small plants do not operate a finished-goods account but have all finished goods in the work-in-process account until they are shipped.

Cost of Sales

Each month the *shipments* will be priced *at standard manufacturing cost* from the cost cards, and the resulting total cost of shipments will be trans-

ferred from the work-in-process or finished-goods accounts to the appropriate manufacturing cost of sales accounts.

Commercial cost of sales for the month will be obtained by multiplying the total manufacturing cost of sales by the standard commercial-burden rate. This will be the amount of commercial expenses absorbed in the operations of the month.

No cost variances or other adjustments should be allowed to enter the cost-of-sales accounts. It is important that *cost of sales always show the anticipated or planned cost* of all shipments for comparison with the sales. Inadequate manufacturing or distribution margins will in this way be automatically set forth.

FINANCIAL STATEMENTS

The Balance Sheet

Form and Description: A suggested balance sheet is illustrated in Form 4. Although unorthodox, this form possesses many advantageous features for management. The current assets are shown first, followed by the current liabilities, which are deducted from the current assets to obtain the net working capital. Next the fixed assets and prepaid expenses are added, and the noncurrent liabilities are deducted to obtain as a final figure the net worth of the business, which is the equity that the owners have in it. The balance sheet should be prepared in columnar form to provide a direct monthly comparison of all items. This is a valuable control feature because unfavorable trends will be detected quickly and steps can be taken to correct the difficulties before they become serious.

Explanation of the Entries: All entries in the balance sheet will be taken from the accounts in the assets and liabilities sections of the general ledger as illustrated on the chart of accounts excepting the profit or loss for the year to date, which will be entered directly from the profit-and-loss statement. The names of the balance sheet correspond with the general ledger accounts and their symbols. When all entries have been made in the general ledger and the work completed at the end of the month, the balance sheet will be prepared by entering the net balance shown in each account on the appropriate line on the balance sheet. Since the items are entered on the balance sheet in the order in which the accounts appear in the general ledger, this process consists merely of carrying individual or summarized balances to the balance sheet and then adding them up.

Analyzing the Balance Sheet: *Working capital* and *net worth* probably constitute the two most important items to look for on the balance sheet of a going concern.

BALANCE SHEET

Year ending _____

| | | <u>January</u> | <u>February</u> |
|--------|-------------------------------------|----------------|-----------------|
| 100-2 | Cash | — | — |
| 110 | Accounts receivable—trade | — | — |
| 111 | —other | — | — |
| 112 | Notes receivable | — | — |
| 122 | Life-insurance cash value | — | — |
| 140-9 | Inventories | — | — |
| | Total current assets | — | — |
| 300 | Less: Accounts payable—trade | — | — |
| 301 | —other | — | — |
| 302 | Dividends declared | — | — |
| 303-4 | Taxes withheld | — | — |
| 306 | Notes payable—banks | — | — |
| 308 | —other | — | — |
| 310-17 | Expenses and taxes accrued | — | — |
| 318 | Provision for bad debts | — | — |
| | Total current liabilities | — | — |
| | Working capital | — | — |
| 200-41 | Add: Fixed assets less depreciation | — | — |
| 280-4 | Expenses prepaid | — | — |
| | Total | — | — |
| 410 | Less: Reserve for contingencies | — | — |
| 500 | Long-term debt | — | — |
| 510-14 | Net worth | — | — |
| | Working capital—increase | — | — |
| | —decrease | — | — |
| | Net worth—increase | — | — |
| | —decrease | — | — |

FORM 4

(Courtesy of Cooley & Marvin, Boston.)

The *working-capital position* shows the company's ability to meet its obligations, while the *net-worth position* indicates whether the business is making or losing money. The working capital is the net excess of current assets over current liabilities. Roughly speaking, a current asset may be defined as any asset that can be realized in cash within one year, and a current liability may be any liability which must be paid in cash within one year. Although the working-capital requirements will vary by particular types of business and will be especially affected by terms of collection and inventory needs, it may be stated as a rule-of-thumb approach that to meet current payables when due the current assets should be at least double the current liabilities.

Ratios of current assets to current liabilities are often used by credit grantors as measurement factors in determining the working-capital position of the business. For management purposes the use of ratios should be relegated to a secondary role, because a company with a large cash balance and unpaid bills will have a substantially poorer ratio than the same company after it has reduced the cash balance and paid the bills. Yet in either case the net working capital would be identical.

A continuous review of the working-capital position as provided by the balance sheet is advisable and frequently necessary. To maintain a prime credit rating it is essential that the management have a definite idea at the time money is borrowed when it will be repaid. The monthly balance sheet showing working-capital trends will be of substantial value in this important connection.

The net worth is represented by the accounts in the capital stock and surplus section of the chart of accounts and is composed of capital stock, surplus, and profit and loss after deducting dividends declared. Continuous review of the net-worth position is desirable because in this way the management will know what is happening not only with respect to operating results but also as to any other changes in net worth which may not show on the profit-and-loss statement.

In a small, closely held corporation the management should carefully compare the net-worth position with the volume of sales both actual and anticipated and with the working-capital position each time the question of dividend declarations arises. A reasonable ratio of net worth to volume of business should be determined upon by the management, and dividends should not be allowed to reduce the net worth below this point. If the net worth is reduced below this accepted figure through dividend payments, the working-capital position may be weakened to a dangerous point should the business run into a period of depression.

The Profit-and-Loss Statement

Form and Description: A comparative monthly profit-and-loss statement is illustrated in Form 5. This is the number one management statement and should be obtained promptly at the end of each month. Examination of this form will show a number of features not found on the usual profit-and-loss statement. It is intended for management purposes and not for financial reporting. The small businessman not only must know *what profit was actually made* but in addition must know *what profit should have been earned* on the basis of the cost figures that have been used in making operating plans and in checking and perhaps arriving at selling prices. The anticipated operating profit will show the profit that would have been made

on each class of products shipped if all contingencies considered in setting up the costs had been met and if everything had worked according to plan. The cost variances show in each instance the amounts by which actual operations departed from anticipated performance. The actual operating profit is the result of adding these variances to the anticipated operating profit or deducting them from it. The orthodox profit-and-loss statement prepared from taking inventories, though acceptable for financial reporting, does not provide this essential information for management purposes. The orthodox statement shows what has happened. The statement suggested shows what has happened, what should have happened, and the reasons for any differences.

PROFIT-AND-LOSS STATEMENT

Month of _____

| | <u>Total</u> | <u>Product A</u> | <u>Product B</u> |
|---------------------------------|--------------|----------------------|----------------------|
| 600 Sales | _____ | _____ | _____ |
| Less: | | | |
| 610 Returns and allowances | — | — | — |
| 640 Commissions | — | — | — |
| Total deductions | _____ | _____ | _____ |
| Net sales | — | — | — |
| 670 Cost of sales—manufacturing | — | — | — |
| Gross profit—anticipated | — | — | — |
| 680 Cost of sales—commercial | — | — | — |
| Operating profit—anticipated | ===== | ===== | ===== |
| Cost variances: | | | |
| 690 Material—quantity | — | | |
| 691 —price | — | | |
| 692 Labor | — | | |
| 693 Manufacturing burden— | | | |
| expenditure | — | | |
| volume | — | | |
| efficiency | — | | |
| 694 Commercial burden | — | | |
| Total variances | _____ | | |
| Operating profit—actual | — | | |
| 90 Other income | — | | |
| 91 Other charges | — | | |
| Net profit—this month | _____ | | |
| —to date | ===== | | |

FORM 5

(Courtesy of Cooley & Marvin, Boston.)

Explanation of the Entries: The profit-and-loss statement is prepared from the income and expense accounts in the ledger as shown on the chart of accounts. It is necessary simply to enter on the profit-and-loss form the balances for the month as shown in the accounts for sales, deductions from sales, manufacturing cost of sales, and commercial cost of sales to arrive at the anticipated operating profit. The cost variances, other income, and other charges are next entered from the appropriate accounts and added or deducted to obtain the operating results. Preparation of the profit-and-loss statement becomes simply a routine step after all the entries have been made in the general ledger accounts.

Source of the Information: All information shown on the profit-and-loss statement will be taken from the appropriate accounts in the general ledger after having been compiled from the sources explained below. Sales figures will be obtained from the duplicate customers' invoices. Manufacturing cost of sales will be arrived at by pricing all sales at standard costs as shown by the cost cards. Commercial cost of sales will be obtained by multiplying the total manufacturing cost of sales by the commercial burden rate which was used in applying commercial burden on the product cost cards. The cost-variance accounts in each instance will show, if debit balances, how much the actual costs exceeded the standard costs and, if credit balances, how much the standard costs were greater than the actual costs.

Analyzing the Income Statement: The first thing to look for on the profit-and-loss statement is the *amount of anticipated operating profit in each product class and the ratio of this operating profit to sales*. This is important as a means of determining if the calculated margin in each product class is as satisfactory as can reasonably be expected. The cost-variance accounts will not provide any information as to whether or not the anticipated profit margins are satisfactory. This can be determined only by comparing the profit results with the sales. The cost variances point out reasons for differences between these anticipated profits and the actual profits.

Next, study the cost variances. These variances should be supported by proper analyses to enable the management to pass judgment upon the propriety of the cost variances and whether or not corrective action should be taken.

Cost variances are not distributed to classes of products on the profit-and-loss statement, because the standard costs are considered to be the real costs and the variances simply reflect the extent to which actual performances have departed from anticipated performances.

In reviewing the statement of profit and loss each month *the manufacturing-burden cost variances should be studied* so that the implications of the expenditure variance, the volume variance, and the efficiency variance will

be thoroughly understood. In periods of advancing business the volume variance may show large credit balances or gains and offset losses of efficiency or unusually high expenditures. The expenditure variance is intended to show actual expenditures compared with anticipated expenditures irrespective of volume. *The volume variance* on the other hand is intended to show the effect of volume only. *The efficiency variance* will show variances arising from all sources other than expenditures and volume. Comparison of each profit-and-loss statement as received with those for prior months should be made to note the *trend* in anticipated profits and to *get the cumulative effect of the cost variances*.

Relations to the Balance Sheet: The net profit to date shown on the profit-and-loss statement will be entered each month on the balance sheet in the space provided. The profit-and-loss figure is an all-important element in *analyzing and studying the net worth of the business and the working-capital position*. Naturally the importance of a satisfactory balance-sheet position must not be minimized. A business cannot long endure without it.

But satisfactory earnings are of even greater importance. They are the very lifeblood of the enterprise. Without this constant flow of energy into the business in the form of earnings the finest plant in the world would soon become just a collection of bricks and mortar. In a going concern equal importance should be given to earnings and balance-sheet position. The balance sheet keeps the management posted with respect to the financial strength of the enterprise, and the profit-and-loss statement shows whether that strength is being maintained or improved.

MANUFACTURING EXPENSE CONTROL²

Production-order System: Every manufacturing business regardless of size or simplicity should have *effective production planning and control*. This procedure will be complex or simple depending upon the requirements of the business, but it must in fact plan, schedule, and control production. It is the fundamental job of production control to (1) determine what *products* shall be made, (2) say *when* they shall be made, (3) decide the *quantities* to be made, and (4) keep posted on the *progress of the work* through the factory in order that *schedules will be met* or, if they cannot be met, to determine the reasons why, so that revisions can be made and customers notified accordingly.

Subject to management policies and production and sales requirements it should be the responsibility of production control to (1) write manufacturing orders, (2) maintain perpetual-inventory records, and (3) maintain

² For other types of control see also Chaps. 7 and 8.

control over the stock rooms. All contacts with plant personnel with regard to production orders should be made by production control. *Work should not be started without a shop order issued by production control, and changes should not be made without the authorization of production control.* These are simply the fundamentals which make possible the functioning of the planning department. The production-control system requires five classes of records:

1. Manufacturing order
2. Production-control sheet
3. Identification tag or route card
4. Production report
5. Perpetual inventory.

These records are fundamental irrespective of the size of the plant or its complications.

In many small plants the production-control work is handled by one clerk in the plant superintendent's office. By a combination of essential but simplified record keeping and regular physical checkup with manufacturing departments, the production-planning and -control procedure can be maintained on an effective practical basis devoid of unnecessary red tape.

Manufacturing Order: A manufacturing order is illustrated in Form 6. A copy should be sent to all departments so that each will be posted with

| MANUFACTURING ORDER | | | | | |
|----------------------|----------------|---------------------|-------------------|----------------|-----------|
| DATE ISSUED | PATTERN NO. | DRAWING NO. | ORDER NO. | | |
| DATE WANTED | MATERIAL | MAT. REQ. NO. | QUANTITY | | |
| TYPE | SIZE | PRODUCT | | | |
| SPECIAL INSTRUCTIONS | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| INSPECTOR'S REPORT | | | | | |
| DATE | GOOD PIECES | DEFECTIVE PIECES | SPOILED PIECES | LOST PIECES | SIGNATURE |
| | | | | | |

FORM 6

(Courtesy of Cooley & Marvin, Boston.)

essential. The problem simply resolves itself into a practical one of deciding in a given situation as to whether the best results will be obtained by operating complete perpetual-inventory records or instead referring directly to the physical stores to determine quantities on hand before issuing manufacturing orders.

Identification tags or route cards are essential so that work passing through the plant can be readily identified as applying to specific manufacturing orders. Every department should prepare daily production reports and send them to production control the first thing each morning.

In small plants it is usually desirable to *schedule production to departments*, only leaving the responsibility with the departmental foreman to *schedule work within the department*. There are, however, many small plants which successfully schedule production to specific machines within departments. The decision will rest upon the practical consideration of the problems involved in the specific instance.

Classification of Expense: A manufacturing-expense schedule is illustrated in Form 8. The items listed on this statement correspond to the manufacturing-burden accounts in the general ledger as shown on the chart of accounts. After the trial balance of the general ledger has been taken at the end of the month, the amounts shown in each of these accounts will be entered in the space provided on this statement and the cumulative amount of each class of expense will be entered for the year to date. These accounts in the ledger are arranged by classes of expense. Accounts 700 through 711 will contain supervision salaries and indirect labor, 720 through 726 other labor and affiliated costs, 730 through 734 supplies, 740 through 748 various expenses, 790 through 794 fixed charges. At the bottom of the sheet total actual expense for the month and for the year to date and the expense absorbed in costs for the month and the year to date will be entered. *The difference between the expense absorbed and the actual expense will be the burden variances.* If actual expenses exceed absorbed expenses, the difference will be an unabsorbed burden variance, but if the absorbed expenses exceed the actual expenses, an overabsorbed burden variance will result. The actual burden rate for the month and for the year to date should be inserted as a statistical comparison with the standard burden rate used in cost calculation.

This manufacturing-expense schedule will be prepared by entering from the appropriate ledger accounts the amounts shown to have been expended for the month. Comparison of each expense from month to month and from year to year is provided. This is a simple but effective visual control of expenditures by individual items. *The amount by which the total actual expense varies from the total expense absorbed in costs provides a quick and effec-*

tive executive control over total expenditures as related to the amounts planned on in setting up the costs. Unabsorbed burden simply represents expenditures which are not being recovered through the cost figures. Comparison of actual burden rates with the standard rate shows what adjustment would have to be made in the burden rate to absorb all expenditures.

MANUFACTURING-EXPENSE SCHEDULE

Fiscal year _____

| Acct. No. | Name | This Month | Year to Date |
|--------------|--------------------------------------|------------|--------------|
| 700 | Superintendence and foremen | — | — |
| 710 | Departmental indirect labor | — | — |
| 711 | Service labor | — | — |
| 720 | Overtime and shift premiums | — | — |
| 721 | Vacations and allowances | — | — |
| 722 | Correcting defective work | — | — |
| 723 | Pensions and pension plans | — | — |
| 724 | Compensation insurance and accidents | — | — |
| 725 | Group insurance | — | — |
| 726 | Social security taxes | — | — |
| 730 | Fuel used | — | — |
| 731 | Power, light, and water | — | — |
| 732 | Indirect materials | — | — |
| 734 | General factory supplies | — | — |
| 740 | Motor-truck expense | — | — |
| 741 | Transportation inward | — | — |
| 743 | Research and laboratory | — | — |
| 744 | Repairs and maintenance buildings | — | — |
| 745 | Repairs and maintenance machinery | — | — |
| 748 | General factory expense | — | — |
| 790 | Insurance | — | — |
| 792 | Taxes | — | — |
| 794 | Depreciation | — | — |
| | Total actual expense | — | — |
| | Expense absorbed in costs | — | — |
| | Burden variances: | | |
| | Unabsorbed | — | — |
| | Overabsorbed | — | — |
| | Burden rate—Actual | — | — |
| | —Standard | — | — |

FORM 8

(Courtesy of Cooley & Marvin, Boston.)

Developing the Burden: In a prior section it was stated that costs are divided into the three elements of direct material, direct labor, and burden. The burden is divided into manufacturing burden and commercial burden. The

next consideration is *how to arrive at the manufacturing burden in calculating the cost of a product*. Whether job costs or standard costs are used, the burden must be reduced to a unit rate or rates. But before these burden rates can be determined, the management must decide (1) the volume of output to budget and (2) the anticipated burden cost of producing this output.

It then becomes necessary to decide upon the *method of burden application* and whether a *single burden rate* shall be used for the entire plant or *separate rates* set for each department or cost center. Various bases are used for this purpose, such as percentage of direct labor, rate per man-hour, and rate per machine-hour. *In the usual small plant a single burden rate applied as a percentage of direct labor is to be recommended.*

This is particularly true when a standard-cost system is used, because the usual objection raised against the method, that of fluctuating labor rates, is absent. Where the percentage of labor method will not produce satisfactory results, studies should be made to determine the best plan to use in the circumstances. An obvious illustration is a plant which uses large and costly machines in manufacturing certain products only. Here machine-hour rates probably should be used. But the percentage of labor method should never be passed by without giving its applicability serious consideration.

If all products do not pass through all major operations, individual departmental burden rates may be desirable. But departure from a single plant-burden rate should be taken only after mature study of all the facts. But whether a single burden rate is to be used or department or cost center rates decided upon, the procedure will be the same.

The first step is that of *setting up a budget of anticipated volume and expenses on a yearly basis*. Form 9 illustrates a form to use. The accounts down the left side of the sheet correspond to those shown on the manufacturing-expense schedule and the chart of accounts. The bases of distribution column and the procedures indicated in it will be eliminated if a single burden rate is used for the entire plant. In the total column will be entered the estimated amount of each expenditure, and all the figures in the total column will be added to arrive at the total burden. The total anticipated direct labor for the same period (if direct labor is used as the basis) will be entered on the units of burden application line directly under the total burden. Dividing the total direct labor into the total burden will produce the burden rate to use as a standard in calculating cost. If it is decided to use departmental or other cost center burden rates, columns at the right of the sheet should be provided for each of the departments or cost centers and the amounts in the total column should be distributed to these cost centers or departments on the bases of distribution indicated. When the total expense applicable to each department has been obtained, the columns will be added and the burden rates for each department or center will be calculated.

MANUFACTURING BURDEN BUDGET

| | <u>Accounts</u> | <u>Bases of Distribution</u> | <u>Total *</u> <u>(1 year)</u> |
|-----|--|---|-----------------------------------|
| 700 | Superintendence and foremen: Supt. Foremen | General factory Direct | |
| 710 | Departmental indirect labor | } Direct | |
| 711 | Service labor | | |
| 720 | Overtime and shift premiums | | |
| 721 | Vacations and allowances | | |
| 722 | Correcting defective work | } Total payroll | |
| 723 | Pensions and pension plans | | |
| 724 | Compensation insurance and accidents | | |
| 725 | Group insurance | | |
| 726 | Social security taxes | | |
| 730 | Fuel used | Direct | |
| 731 | Power, light, and water: Power Light Water | Equalized hp hours Building service Total payroll | |
| 732 | Indirect materials | } Direct | |
| 734 | General factory supplies | | |
| 740 | Motor-truck expense | } General factory | |
| 741 | Transportation inward | | |
| 743 | Research and laboratory | | |
| 744 | Repairs and maintenance buildings | | |
| 745 | Repairs and maintenance machinery | Building service | |
| 748 | General factory expense | Direct or maintenance | |
| 790 | Insurance: Buildings | General factory | |
| | Machinery | Building service | |
| | Inventories | Value | |
| 792 | Taxes: Local | General factory | |
| | Other | Building service | |
| 794 | Depreciation: Buildings | General factory | |
| 794 | Machinery | Building service | |
| | Totals | Value | |
| | Maintenance of machinery | Direct or value | |
| | Building service | Floor area | |
| | General factory | Total payroll | |
| | Total burden | | |
| | Units of burden application | | |
| | Burden rates | | |

* Amounts in the total column to be distributed to the following centers on the bases indicated.

- | | |
|-------------------------------|---|
| 1. Production burden centers: | 2. Service and indirect centers: |
| A | Maintenance of machinery (Redistribute) |
| B | Building service (Redistribute) |
| C etc. as required | General factory (Redistribute) |
| | Idle plant (Charge account 916) |

FORM 9

(Courtesy of Cooley & Marvin, Boston.)

Applying Burden to Production: Burden should always be applied to production on a standard or normal basis. Unless this procedure is followed, inflated inventories and resulting unreal operating profits may be shown. Furthermore if actual burden rates are used for cost purposes in periods of low output, a company may price itself out of the market. On the other hand in periods of rapidly expanding business if the actual volume exceeds the sales estimates used in setting the standard burden rate, substantial amounts of overabsorbed burden may result.

At the end of each month this *overabsorbed burden should be studied* to determine how much of it was earned on (1) goods that have been sold and (2) goods still in the plant. The proportion applicable to goods still in the plant will be deducted from inventories as an inventory reserve, and the proportion applicable to sales will be shown as a burden-variance credit on the profit-and-loss statement. The net effect of this procedure is that production will be charged with factory burden on the basis of the lower of standard or actual cost.

Techniques of Burden Control: The burden variances should be reviewed carefully to determine their source and importance. The cost-control structure (Form 3) indicates a three-way analysis of factory-burden variances: (1) expenditure variance, (2) volume variance, and (3) efficiency variance.

In setting up a manufacturing-burden budget (Form 9), estimated yearly expenditures are entered for each burden account. If each amount is divided by 12, the budget of each account per month will be obtained. If this amount is compared with the actual burden at the end of each month as shown by the manufacturing-expense schedule (Form 8), the difference, plus or minus, will be the expenditure variance. This figure will show whether the actual expenditures have been greater or less than the expenditures which were assumed in setting up the burden budget.

Next, the management will want to *know the effect of volume on this burden variance*. One-twelfth of the direct labor used in the manufacturing-burden budget (Form 9) multiplied by the standard burden rate would produce the amount of burden expected to be absorbed at the anticipated volume. The direct labor absorbed for the month multiplied by the standard-burden rate will show the burden actually absorbed, and the difference between these two figures will show the effect of volume upon the burden variance. By removing the expenditure variance and the volume variance from the total factory-burden variance, the balance may be considered the efficiency variance. Whether or not this balance should be analyzed further will depend upon its size and if unusual situations of sufficient importance were taking place to interest the management in the resulting effects.

The management should consider the burden rate as a symbol of volume for purposes of quick control; for example, a burden rate of 100 per cent may represent a sales volume of \$500,000 annually at one shift of 40 hours a week. If the relationship of these factors is kept in mind, a helpful yet simple technique of burden control will be provided.

COMMERCIAL-EXPENSE CONTROL

Administrative Expense: Suggested administrative expense accounts are indicated on the commercial-expense schedule (Form 10). One school of accounting thought believes that there are only two classes of expense in a manufacturing business: (1) manufacturing and (2) selling, and that all administrative expenses should be apportioned to them. Without attempting to quarrel with that idea, the suggested plan proceeds on the assumption that *the small business executive will find it advantageous to have all expenses presented to him on the monthly reports in the form in which they have been recorded on the general ledger without requiring further analysis.*

While it is recognized that undoubtedly a substantial portion of executive salaries and other administrative expenses could logically be prorated to manufacturing burden and accordingly included in the burden rate, there is a major accounting objection. The manufacturing-burden rate or rates as developed on the manufacturing-burden budget will be used to price work-in-process and finished-goods inventories. The manufacturing-burden budget suggested includes only those expenses and other costs which are directly connected with manufacturing, and no salaries are included above the rank of factory supervision. All these expenses represent legitimate additions to the cost of inventories. If all executive salaries and other administrative expenses are apportioned between manufacturing burden and selling expense, it will be necessary in pricing inventories to exclude this apportionment from the manufacturing-burden rate.

Selling Expense: Suggested selling-expense accounts are also shown in Form 10. In the usual small business it seems desirable to restrict the selling-expense accounts to direct-sales expenditures without redistribution of items. Obviously *the requirements of the individual business will dictate the selling-expense accounts to be used.* Some small businesses operate highly extensive distribution and sales organizations, sometimes selling direct, sometimes through sales offices and showrooms. In those situations the selling-expense classification will naturally be expanded accordingly, but whatever the extent of this expansion, the added accounts should all be included in the commercial-burden section of the general ledger as shown by the chart of accounts.

COMMERCIAL-EXPENSE SCHEDULE

Fiscal year_____

| Acct. No. | Name | This Month | Year to Date |
|--------------|------------------------------|------------|--------------|
| 800 | Salesmen's compensation | — | — |
| 804 | Sales traveling expense | — | — |
| 805 | Sales auto expense | — | — |
| 811 | Advertising | — | — |
| 818 | Transportation outward | — | — |
| 819 | Other selling expense | — | — |
| 860 | Executive salaries | — | — |
| 861 | Office salaries | — | — |
| 862 | Professional services | — | — |
| 863 | Executive traveling | — | — |
| 864 | Office supplies and expense | — | — |
| 865 | Company auto expense | — | — |
| 866 | Postage | — | — |
| 867 | Telephone and telegraph | — | — |
| 868 | Subscriptions and dues | — | — |
| 869 | Donations | — | — |
| 870 | Bad debts | — | — |
| 873 | Life-insurance premiums | — | — |
| 874 | Social security taxes | — | — |
| 878 | Other administrative expense | — | — |
| | Total actual expense | — | — |
| | Expense absorbed in costs | — | — |
| | Burden variances: | — | — |
| | Unabsorbed | — | — |
| | Overabsorbed | — | — |
| | Burden rate—actual | — | — |
| | —standard | — | — |

FORM 10

(Courtesy of Cooley & Marvin, Boston.)

Analyzing the Commercial Expense: A commercial-burden budget should be prepared as a basis for determining the commercial-burden rate. This will be done along the lines described in connection with developing the manufacturing-burden budget. The commercial-expense schedule illustrated in Form 10 should be used as a basis. The names of the accounts shown as set forth in the chart of accounts will be entered on the left of a columnar sheet. In a column at the right should be entered the estimated normal amount for each account on an annual basis. When all these amounts have been added, the result will be the total budgeted commercial expense on an annual basis. In a small business *commercial burden will usually be applied to costs on the basis of a percentage of total manufacturing cost*. This method assumes that administrative and selling expenses go up or down in

proportion to the manufacturing cost of the product, which may not be true. However, the method is reasonable and practical, particularly for the small business.

The anticipated standard cost of manufacturing the budgeted sales volume will be entered in the total column directly below the total budgeted expenses. The burden rate will be obtained by dividing the total manufacturing cost into the total commercial burden.

If it is desired to obtain commercial-burden rates by classes of products, it will only be necessary to have additional columns to the right of the total column in which to enter the distribution of the amount shown in the total column for each expense item. When all items have been distributed and the columns are added, the total anticipated expense in each column will be divided by the appropriate budgeted factory cost of sales to obtain the commercial-burden rate applicable to each class of product. As stated previously, however, *the use of a single burden rate is recommended to every small business unless the distribution problem is so complex that accurate costs and cost control require the more elaborate breakdown by classes of products or other bases of cost distribution.*

The commercial-expense schedule should be provided for the management *promptly at the end of each month.* This will show the actual expenditures for all administrative and selling expenses for the month and for the year to date. It will also show the amount of expense absorbed in costs, the amount unabsorbed or overabsorbed, and comparison of the standard-burden rate with the actual rate for the month and for the year to date. *This monthly report should be scanned carefully* and compared with the commercial-burden budget upon which the standard-burden rates were based. Differences in individual amounts of expense between the budget and the actual amounts for the month and for the year to date should be reviewed, and if of sufficient importance, they should be analyzed to make sure that unsound practices or unnecessarily high costs are not creeping into the operations in the distribution field.

Applying Expense to Output: The amount of commercial expense applied to output will be determined by multiplying the total manufacturing cost of sales for the month by the standard commercial-burden rate. The commercial-burden variance account will show the amount by which actual administrative and selling expenses for the month and for the year to date are at variance with the amounts of these expenses absorbed in costs on the basis of the standard rate. Here, as in the case of manufacturing burden, *comparison should be made of the expenditures shown on the commercial-expense schedule for the month with the monthly provision for each of these amounts as set up on the commercial-burden budget.* This comparison will show the

expenditure variance. The volume variance will be obtained by comparing the amount of commercial burden absorbed for the month with the amount obtained by multiplying one-twelfth of the budgeted cost of sales by the standard-burden rate.

Many small business managers devote too little time to adequate review and control of administrative and selling expenses in relation to the sales program as a whole. In preparing the anticipated sales volume for standard cost and operating purposes, it is essential that this forecast be determined on the basis of a careful review of sales expectancy. *It is not enough to decide that the company ought to get \$500,000 worth of business. The sales forecast should reflect the best estimate of what classes of goods will be sold, where they will be sold, and what price will be received for them.* Only in this way will the sales forecast and the resulting commercial burden rate be worthy of dependence. Furthermore, this approach will be found helpful in the important direction of obtaining the desired volume of profitable business and controlling the cost of getting it.

ACCOUNTING RESPONSIBILITY

Management's Responsibility for the Accounts: Management is responsible for stating the accounts, and all financial statements issued from the accounts are representations of the management. This basic responsibility is not altered by the fact that the financial statements may be accompanied by the opinion or certificate of a certified public accountant and included in his report. When the certified public accountant is called in to audit the books, he performs such examination as his experience, training, and judgment indicate should be performed in the circumstances, including a sampling and testing of transactions and other auditing procedures. The revised short form of accountant's report recommended by the Committee on Auditing Procedure of the American Institute of Accountants under date of October, 1948, described the certified public accountant's examination in these words:

Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

If, as the result of this examination, the auditor satisfies himself with respect to the financial statements, he furnishes his opinion as quoted from the short form of accountant's report referred to above:

In our opinion, the accompanying balance sheet and statement of income and surplus present fairly the financial position of X Company at Dec. 31, 19—, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

The certified public accountant therefore simply expresses an informed opinion with respect to the balance sheet and statement of income and surplus.

Interest of Third Parties: The management of even the smallest business should always *remember the interest of third parties*. Third parties include banks, if there are bank loans; trade creditors; Federal, state, and local governments; and the public. The accounts of the company should be stated in accordance with accepted accounting principles applied on a consistent basis from year to year, so that none of these interested third parties or investors will be misled. The public interest and the social aspects of accounting in business must not be overlooked. A first job of business is to serve the public better. This public service includes *the important goals of providing the highest possible consistent employment at good wages so that more and more goods reach more people at lower selling prices*. Management has the continuing responsibility to see to it that the accounting procedure is simple, practical, and illuminating to serve third parties properly as well as those whose capital rides on all the business decisions.

SUMMATION ON ACCOUNTING

Some Consequences of Poor Accounting: Too often good accounting is confused with elaborate accounting. As a result, many small businessmen think of a modern accounting system as a package of complicated books, records, and intricate procedures, bound up with red tape. In this chapter it has been the aim to describe a plan of accounting which can be adapted to the needs of the usual small business. When properly installed, this plan will *provide a maximum of continuous and valuable managerial information with a minimum of cost and clerical labor*. This plan represents good accounting, not elaborate accounting.

It should be emphasized also that a good accounting system will usually be operated as easily and as economically as a poor accounting system; in fact, not infrequently the poor accounting system will be the more costly of the two from the mere standpoint of operating costs. So many unfortunate consequences can flow from poor accounting procedure that no attempt is made to elaborate on them. An important weakness of poor accounting is that the *management is kept in the dark* from month to month with respect to whether the business is making or losing money. Even at the end of the year or other fiscal period when physical inventories are taken, the results shown by a poor accounting system may well be questioned. A good accounting system provides up-to-date figures based on facts. A frequent weakness of a poor accounting system is that the books may not show all the liabilities

of the company because of failure to enter all vendors' bills and other current liabilities whether paid or accrued at the end of each month before preparing the monthly statements. Thus the executive may have a complete picture of current assets but an incomplete picture of the current liabilities.

Poor accounting procedure often results in improperly stated inventories with respect to both quantities and prices. This can easily lead to embarrassment and has resulted not infrequently in disaster to the business.

Unsound costing concepts and unsound pricing procedures resulting from poor accounting methods may easily help to price a company out of the market.

These points are emphasized because so many small businessmen seem to harbor the belief as stated previously that good accounting is synonymous with elaborate accounting and should be reserved for the large companies. *Actually the small business needs good accounting even more than the large business.* It is probably not an overstatement to say that the success of a small business may be governed largely by the degree of efficiency and effectiveness of the accounting.

CHAPTER 17

HOW TO PAY AND SAVE IN TAXES

BY

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For a proper understanding of this subject, it is first necessary to have a general knowledge of the object and history of taxation. Information on both is presented first. This will be followed by a list of the types of taxes that apply to small businesses, including explanatory descriptions of the more important tax laws and some ideas on how one can legitimately save in taxes, and finally an example is presented of the effects of burdensome and bothersome taxation.

It is impossible in the space allotted here to go into all the intricacies of taxation. The best that can be done is to bring out the high lights and give a few examples which may set any manager to thinking as to whether or not taxes are being paid in excess of those required by law. Information on Federal taxation can be obtained from the Prentice-Hall *Federal Tax Handbook* which sells for \$4.00. Other more expensive services covering Federal and state taxation, running into a number of volumes and made current periodically, are such services as those of Commerce Clearing House and Prentice-Hall.

The main problem of taxes is to determine how to avoid paying taxes in excess of those required by the law. That is the object of this article. There is little doubt that many small businessmen are paying taxes in excess of what they are legally required to pay. The government does not want anyone to pay more taxes than the law requires.

Taxes, of course, should not be avoided illegally. In this connection it is important to note that since 1880 the United States government has given a bounty to individuals who supply information leading to collection of taxes that might otherwise never have been paid. Most tipsters to the government are former employees who turn on their former employers. The government pays up to 10 per cent of the amount collected. Furthermore, if anyone

¹ The author, an engineer, is also an attorney who in his daily work deals with tax problems in many of the states of the Union.

pays less taxes than the law requires, he will be subject to the payment of interest and penalties.

THE KINDS OF TAXES TO BE PAID

Generally speaking, taxes fall into the following classifications:

1. Individual income taxes
2. Corporation taxes
3. Gross-receipts, sales, and excise taxes—also earnings taxes
4. Estate and inheritance taxes
5. Business license taxes
6. Custom duties
7. Real- and personal-property taxes, intangible-property taxes
8. Capital levy
9. Social security taxes.

Indirect taxes such as excise taxes on cigarettes are designed for their administrative convenience in reaching the incomes of the poorer classes, who are only with difficulty brought within such direct taxes as income taxes and estate taxes. These indirect taxes are paid by the ultimate consumer in the form of an increased price for the merchandise.

Actually, most business taxes are shifted to the ultimate consumer by increasing the price of the merchandise. Such taxes as gross-receipt taxes, real- and personal-property taxes on business property, franchise taxes, license taxes can readily be shifted. The personal income tax and the real- and personal-property taxes on the home of an individual cannot be shifted.

Taxes are proportional, progressive, or regressive. A proportional tax is one where the same rate applies to all, such as a 1 per cent earnings tax with no exemptions. A progressive tax is one where the rate increases as the amount increases, such as the Federal income tax. A regressive tax is one where the rate of taxation on income or property diminishes with the increase in the amount of income or property.

The main object of taxation is to raise revenue for the support of the government. There are other ulterior objects of taxation such as (1) the discouragement of the use or consumption of things having disadvantageous personal or social effects, as exemplified by the liquor taxes; (2) the encouragement of particular trades, such as the tax on oleomargarine to benefit the dairy industry; and (3) the equalization of wealth and remedying of social inequality, as exemplified by the excess taxes in the upper brackets of the income and inheritance taxes.

It is axiomatic that every government has the right to exact taxes from the people for its support. Taxes should be based not only on the ability to

pay but upon the equality of sacrifice on the part of the people. Taxes on food and clothing and other articles of universal consumption such as electricity and sources of heat are unjust, as they fail to take into account ability to pay and equality of sacrifice. In other words a certain minimum of income sufficient to provide the necessities of existence should be left untouched by taxation.

There should be economy in taxation. Taxes ought to be so contrived as to take out of the pockets of the taxpayer as little as possible over what is needed in the public treasury. By this is meant that the cost to the public treasury in collecting taxes should be kept as low as possible, as should the cost of time and labor to the taxpayer in completing forms and calculating the taxes. Taxes ought to be considered also in the light that they are payment for valuable services rendered by the government to individuals. They should fall equally.

A BRIEF HISTORY OF UNITED STATES TAXATION

The next preparatory step to a proper understanding of taxes is a short review of the history of taxation in this country. *The general real- and personal-property tax was the earliest and chief source of local tax revenue.* This tax has an unbroken historical record from the earliest colonial days to the present. In colonial days when it became necessary to build a bridge, the original idea was that each resident should contribute to the common fund in proportion to his ability. His ability was determined by setting a value known as the assessment on the land and buildings owned by the taxpayer, also on furniture, cattle, etc. People who earned from trades or professions were rated at arbitrary sums based on a rough estimate of their income. In the first part of the nineteenth century it became a personal tax; *i.e.*, a value was placed on everything a man possessed. It became difficult to ascertain the amount of bonds, mortgages, and cash owned by a person. At present the personal-property tax is levied on tangible things, *i.e.*, things one can put his hands on, such as furniture, automobiles, stocks of goods, and merchandise. In some states intangible property, such as stocks and bonds, are taxable, but this is somewhat ineffective, as they are quite easily concealed or placed outside the state.

Probably 85 per cent of the real- and personal-property tax is on land and buildings. The value of the real and personal property is decided by the assessor, and the assessment is made each year. While the law generally provides that the assessment should be full value, in most instances the assessment is below the real value. When the assessor has completed the assessment, a review is held, allowing taxpayers who feel their assessment is too

high or not assessed on the same basis as other similar property to have a hearing before the tax board.

In some states where all branches of the government levy a general property tax, the rate levied on any one taxpayer is a combination of three or more tax levies, for example, \$5 per thousand dollar assessment for state tax, \$7.50 per thousand dollars county tax, \$20 per thousand dollars town or city tax, \$10 per thousand dollars school tax, making the total tax rate \$42.50 per thousand dollars of assessed valuation.

While the general property tax was the predominant type of early American taxation by the states and local communities, *at that time the Federal government relied heavily on custom duties and excises. Today the Federal government levies about 60 excise taxes* such as those on cigarettes, liquor, furs, cosmetics, jewelry, telephone, and admissions.

The Federal government derives its power for taxation from the Constitution. The various states by their ratification of the Constitution gave the United States Congress the power by Article 1, Section 8, of the Constitution to lay and collect taxes, duties, imposts, and excises to pay the debts and provide for the common defense and general welfare of the United States. It provides further that all taxes shall be uniform throughout the United States. Article 1, Section 9, provides that no capitation (a levying of a tax on each person) or other tax shall be laid unless in proportion to the population. The phrase "shall be uniform throughout the United States" together with the provision that taxes shall be in proportion to the population were interpreted by the courts to mean that the taxes applicable to each state would be apportioned according to the population of each state. The constitutional provision requiring apportioning of direct taxes among the states by population acted as a brake on any attempts of the Federal government to tax individual incomes or real and personal property. Before the income tax really became possible, it was necessary to pass the Sixteenth Amendment.

Since the collection of taxes depends on the ability of the taxpayer to pay the tax imposed, it is doubtful if the Federal government will ever impose a property tax, as certain states with relatively large population and comparatively small capital wealth would be unable to pay the tax imposed.

Although an *income tax* had been imposed during the Civil War, when a similar tax of 2 per cent upon income became law in 1894, it was opposed as being unconstitutional in that it was a "direct" tax and could not be levied without apportioning the amount to be required among the states according to their population. It was claimed that the tax would be collected from the prosperous people in the Eastern states and disproportionately spent, for example, in Alabama. The law was said to be class legislation and to make a distinction between the rich and the poor.

It was not until July, 1909, that, largely through the efforts of Theodore Roosevelt, Cordell Hull, President Taft, and Senator Borah, the Congress by an overwhelming majority passed the Sixteenth Amendment, which reads as follows:

The Congress shall have the power to lay and collect taxes on incomes from whatever source derived without apportionment among the several states and without regard to any census or enumeration.

It was not until February, 1913, at the start of President Wilson's administration that the amendment was ratified by the thirty-sixth state and thus became a part of the Constitution. The Sixteenth Amendment to the Constitution gave the Congress the right to tax a person according to the size of his income without regard to the population of the state in which he happens to live. It is the authority for the Federal income taxes of today.

Except for the provision in the Constitution prohibiting the taxing of interstate or foreign commerce, the respective *states within the boundaries of their own constitution can impose taxes duplicating those imposed by the Federal government*. Generally the states have a larger tax field than the Federal government, as they are not hampered by the provision in the United States Constitution that requires the imposition of direct taxes (except for the income tax) to be apportioned according to the population.

The cities and counties derive their rights to tax from the state, which is sovereign. The state, by the passage of enabling legislation within the boundaries of the state constitution, authorizes the cities to pass such tax legislation as sales taxes, gross-receipts taxes, and property taxes.

As the real-property tax has proved to be defective in the taxation of business as well as other property, a great many *taxes on businesses* have developed. Among these are *corporate excess-profits* and *capital-stock taxes*, which are designed to reach the intangible assets of a corporation. *Franchise taxes* have been developed in order to obtain additional revenue from corporations as payments for various privileges. They are supplemented by *entrance charges* on foreign corporations to equalize their taxation with that of domestic companies. In the Southern states and to a certain extent elsewhere, there has been a tendency to employ *state and local privilege, license, and occupation* taxes on numerous types of businesses. In some states income taxes act as a sort of substitute for the intangible-property tax, which is not too satisfactory.

There are numerous other forms of taxation among which are *poll taxes*, which were originally based on the idea that all able-bodied men should go out for at least a few days each year to work on the roads. Those who could not or did not want to do so could pay a tax in lieu of work. These taxes are

slowly passing into disuse because of their cost of collection and inherent inequality.

Inheritance taxes are used in nearly all states and are state taxes, not local taxes. They are graduated by the amount involved and by the relationship of the deceased; thus widows pay a smaller tax than cousins. In determining the amount of inheritance taxes, real estate and tangible personal property are taxable where located. Intangible personal property is taxable by the state in which deceased had his residence.

Without doubt the newest and most inequitable of all taxes are the *gross-receipts tax, the sales and use tax, and the earnings tax*. None of these taxes are based on the theory of ability to pay, nor do they conform to the theory that a certain minimum of income sufficient to provide the necessities of existence should be left untouched by taxation. The gross-receipts tax is sometimes applied by both the state and local governments. It has to be paid whether or not the business is making money. It is, in effect, a direct levy on the necessities of life. As the name implies, it is a tax on the gross receipts of a business. It has various names such as mercantile-license tax, gross-purchases tax, and gross-sales tax. It is subject to pyramiding. That is, when the manufacturer sells to the wholesaler and the wholesaler to the retailer and the retailer to the ultimate consumer, the same tax is collected from the manufacturer, the wholesaler, and the retailer. This tax is, of course, passed on to the consumer in the form of a higher price.

The sales tax is similar to the gross-receipts tax. It is paid by the ultimate consumer and turned over to the government by the seller, who acts as the tax collector. It frequently does not apply to food and certain other necessities. While it is not subject to pyramiding such as the gross-receipts tax, it is sometimes collected more than once on the same item. The use tax is, in effect, a tax placed on the use of an item purchased outside the locality where the sales tax applies for use in the locality where the sales tax applies.

The tax on earnings such as is in effect largely in the states of Pennsylvania and Ohio is a tax paid by the employer of a percentage of the employee's earnings, and the employer deducts this tax from the employee's earnings. The collection is handled in a manner similar to that of the old-age and survivors' insurance tax and the unemployment taxes, all of which together with the income tax are withheld from the employee so that he never gets his hands on the money.

The gross-receipts taxes, sales and use taxes, and earnings taxes are largely the result of the inability of the states and local communities to place further burdens upon the owners of real estate. This inability has arisen in part because the taxing power of the cities and states has been curbed by the fixing of rentals on homes. If taxes on real property were substantially increased, a rent increase could not be avoided. When the business interests

are strong enough to avoid a gross-receipts tax or a sales tax or an income tax and it is not expedient to increase the tax on real property, the net result is an excise tax such as was recently effected in New Jersey where a 3-cents-a-package tax on cigarettes was imposed.

While all this does not completely cover the field of taxation, it is believed that with this foundation one can go on to a brief discussion of all important taxes now applied by the Federal, state, and local governments.

RAPID GROWTH IN FEDERAL GOVERNMENT TAX RATES

First, we shall consider the Federal government taxes. The most important of these is the income tax. This analysis is based on the tax laws effective in 1948.

The following comparison is of interest in showing the extent to which *Federal tax rates have been raised since 1929.*

TABLE 1. COMPARISON OF FEDERAL TAX RATES

| | 1929 | 1938 | 1948 ^a |
|--|-----------|-----------------------|-----------------------|
| Personal income tax: | | | |
| Personal exemption | \$1,500 | \$1,000 | \$600 |
| Normal tax rate | 1½-4% | 4% | 3% |
| Surtax begins at | \$10,000 | \$4,000 | \$600 |
| Surtax rate | 1-20% | 4-75% | 17-88% |
| Corporate income tax: | | | |
| Combined normal and surtax | 11% | 19% | 38% |
| Payroll tax: | | | |
| Old-age insurance: | | | |
| Employees | | 1% ^b | 1% ^b |
| Employers | | 1% ^b | 1% ^b |
| Unemployment insurance—employers | | 3% | 3% ^b |
| Estate tax: ^c | | | |
| Specific exemption | \$100,000 | \$40,000 ^d | \$60,000 ^e |
| Minimum rate | 1% | 2% | 3% |
| Minimum applies to first | \$50,000 | \$10,000 | \$5,000 |
| Maximum rate | 20% | 70% | 77% |
| Gift tax: | | | |
| Specific exemption | | \$40,000 | \$30,000 |
| Minimum rate | | 1½% | 2¼% |
| Minimum applies to first | | \$10,000 | \$5,000 |
| Maximum rate | | 52½% | 57¾% |
| Excise taxes: | | | |
| Distilled liquors, per gal. | \$1.10 | \$2.25 | \$9.00 |
| Fermented malt liquors, bbl. | \$6.00 | \$5.00 | \$8.00 |
| Still wines, per gal. | \$0.10 | \$0.10 | \$0.60 |
| Cigarettes, per 1,000 | \$3.00 | \$3.00 | \$3.50 |

TABLE 1. COMPARISON OF FEDERAL TAX RATES—*Continued*

| | 1929 | 1938 | 1948 ^a |
|---|------------------|------------------|-------------------|
| <i>Excise taxes—Continued:</i> | | | |
| Cigars (8–15 cents), per 1,000 | \$5.00 | \$5.00 | \$10.00 |
| Tobacco and snuff, per lb. | \$0.18 | \$0.18 | \$0.18 |
| Admissions | 10% ^f | 10% ^g | 20% |
| Cabarets, roof gardens, etc. | 15% | 15% | 30% |
| Dues, membership fees | 10% | 10% | 20% |
| Transportation of persons | | | 15% |
| Transportation of property | | | 3% |
| Transport, oil by pipe line | | 4% | 4½ % |
| Automobiles | 3% | 3% | 7% |
| Rubber tires, per lb. | | \$0.04 | \$0.05 |
| Gasoline, per gal. | | \$0.01 | 1½ % |
| Telephone service, local | | | 15% |
| Telephone, long-distance calls | | \$0.10 | 25% |
| Telegraph, cable, radio | | 5% | 25% |
| Electrical energy | | 3% | 3½ % |
| Light bulbs and tubes | | | 20% |
| Sporting goods | | | 10% |
| Playing cards, per package | \$0.10 | \$0.10 | \$0.13 |
| Bowling alleys, year per alley | | | \$20.00 |
| Billiard, pool tables, year per table | | | \$20.00 |
| Furs | | | 20% |
| Jewelry | | | 20% |
| Luggage, handbags, etc. | | | 20% |
| Matches, per 1,000 | | \$0.02 | \$0.02 |
| Mechanical refrigerators | | 5% | 10% |
| Business and store machines | | | 10% |
| Photographic film | | | 15% |
| Photographic apparatus | | | 25% |
| Radio receiving sets | | 5% | 10% |
| Toilet preparations | | | 20% |

^a Combined total of normal tax and surtax is the aggregate of the tentative normal tax and tentative surtax, reduced as follows:

| | |
|-----------------------------------|--|
| If the aggregate is | The reduction shall be |
| Not over \$400 | 17% of the aggregate |
| Over \$400 but not over \$100,000 | \$68 plus 12% of the excess over \$400 |
| Over \$100,000 | \$12,200 plus 9.75% of the excess over \$100,000 |

^b On first \$3,000.

^c Exclusive of "basic estate tax," which is largely offset by credit against state inheritance taxes.

^d Excluding \$40,000 life insurance.

^e Including life insurance.

^f Only on tickets over \$3.

^g Only on tickets over 40 cents.

FEDERAL TAX PAYMENTS

How to Pay Federal Income Tax for a Privately Owned Company

An individual in business uses the regular individual income-tax return Form 1040. Schedule C of this return concerns profit (or loss) from business or profession. The net profit of a business is determined by deducting the cost of goods sold and other business deductions from the total receipts. The total receipts are determined by deducting the returns and allowances from the gross sales. The cost of goods sold is found by adding the inventory at beginning of year to the cost of merchandise bought for sale, labor, material, supplies, and other costs and deducting the inventory at the end of the year. Other business deductions include such items as salaries (not included in labor under cost of goods sold), interest on business indebtedness, taxes, losses, bad debts, depreciation, rent, repairs, etc.

Inventories should include all raw materials and supplies which have been bought for sale, including all finished or partly finished goods (and probably containers). The labor cost involved in the finished or partly finished goods should be included in the inventory. Supplies not intended to be used in the goods to be sold and, of course, goods in the taxpayer's possession which have been sold, the title of which passed to the customer, should not be included in the inventory. Inventories are often valued on a basis of cost and cost or market, whichever is lower. Other methods are last in first out, referred to as "lifo," and first in first out, or "fifo." In determining which of these methods is the best for the particular business, the services of an accountant are necessary. Assuming that during the past inflationary period a businessman has been using the lifo method of valuing inventories, it may well be to his advantage in a falling market to use the fifo method, but application should be made to the Internal Revenue Commissioner for permission to change. Said application to change must be filed within 90 days after the beginning of the year for which the change is to be effective. It may be possible to hedge a heavy inventory by selling short on the commodity market. In that event it may be possible to accept an ordinary loss in the event the price of the commodity sold short advances, while if the commodity sold short declines, one may take a long-term capital gain rather than an ordinary gain. This last should, of course, be carefully considered so that it is assured there are no legal pitfalls.

Salaries and wages (not included under cost of goods sold) are payments to employees for services actually performed. Included under this heading are such items as bonuses, Christmas gifts, commissions to salesmen, dismissal pay, retirement pay, salaries, sick leave and sick disability benefits

Occupation

paid, prizes, etc. Payments to widows of former employees come under this heading. It may be possible to make this payment to the widow and yet avoid the amount being taxable to her. To avoid tax to the widow the payment must be made voluntarily and not in accordance with a formal plan which would give the widow a vested interest by which she could enforce payment by an action at law. *One may increase payments to employees without increasing their taxable income* by providing the employees with tools, special clothing used while working, discounts on purchases of company items, buying at wholesale for employees, medical services on the business premises, education, club dues, etc.

If an employee becomes injured in the course of his employment and payment is continued of his regular salary in lieu of workmen's compensation payments, this payment is not taxable to the employee, and the employer need not make withholding tax deductions. While there seems to be no ruling, it would seem that *similar salary payments made in lieu of sickness disability payments (now required by law in New Jersey) are also not subject to taxation*, and therefore the tax is not to be withheld. The law requires that compensation to employees be reasonable. One can make these payments as high as he wishes providing it can be proved to the Treasury Department that they are reasonable.

Taxes on business and business property are deductible, such as excise taxes, real-property taxes, sales and use taxes, gross-receipt taxes, franchise taxes, gasoline taxes in certain states, license taxes, intangible- and personal-property taxes, automobile license fees, and income taxes. State income taxes on business profits such as the New York State unincorporate business tax are not deductible under "Other Business Deductions," since they are not permitted as reduction of adjusted gross income. They should be deducted under taxes on page 3 of Form 1040.

Depreciation is the allowance one is permitted to deduct for wear and tear on all forms of capital investment. In this category are included obsolescence and depletion. Obsolescence is the shortening of useful life due to changes in business operations or improvements that make an item of little value. Depreciation is usually expressed at so many years. For example, a machine with an estimated useful life of 10 years is depreciated 10 per cent (of its cost) each year. There are other methods of depreciation which might apply to some particular business, for example, the declining-balance method, which is usually figured at 150 per cent of the straight-line rate. The percentage is applied to the remaining balance each year. This method is advantageous on items having a relatively short life. *In determining depreciation rates, the best guide is past experience plus judgment on the obsolescence factor.*

While according to experience a machine may have a life of 20 years, it may be obsolete in 10 years. If this can be proved, an allowance for obsolescence, in addition to depreciation for wear and tear, may be made. The depreciation on each item should be kept separately. *It is, of course, to the taxpayer's advantage to keep depreciation as high as he can legally.* If his equipment is operated in a manner to decrease its estimated life, he can increase the depreciation rate to correspond to this accelerated wear and tear. A new machine with normal useful work life of 20 years would depreciate in half that time, or 10 years, if operated on two 8-hour shifts per day instead of one and in $6\frac{2}{3}$ years if operated on three 8-hour shifts. Hence it may be necessary in certain cases to determine depreciation rates annually.

Depreciation rates should be determined by an engineer. In determining the depreciation rates the engineer should state in his report the basis used for setting the rates, including the obsolescence factor. These data will be of value if it becomes necessary to prove to the tax collector that the rates used are accurate and based on sound engineering practice. Certainly an engineer who knows the buildings and equipment and the trends in the industry tending to make buildings and equipment obsolete can determine better than anyone else the proper depreciation rate. The deduction for depreciation in respect to any depreciable property for any taxable year is limited to such ratable amounts as may reasonably be considered necessary to recover during the remaining useful life of the property the unrecovered cost or other basis. For example, one may have set up a depreciation rate of 10 years on a piece of machinery that cost \$10,000. At the end of 8 years the machine has been depreciated at the rate of \$1,000 per year to \$2,000. If it is now considered that the machine will be continued in service for at least 4 years more, the annual depreciation allowance for the succeeding years will be \$500 annually instead of the \$1,000 annually previously deducted.

A deduction may be made also for the obsolescence or depreciation of the cost or other basis of patents, copyrights, contracts, and similar intangible assets. A new patent should be depreciated annually at *one-seventeenth of its cost*, a copyright at *one-twenty-eighth of its cost*. No deductions for depreciation can be made for the cost of trade-marks, trade brands, or good will.

Rent, repairs, and other expenses are deductible. The cost of repairs is deductible; however, improvements to property must be capitalized. *It is, of course, always an advantage where legally possible to classify an item as a repair rather than an improvement.* Rather than replace a roof it may well be an advantage from a tax angle to make repairs. Rather than replace an iron pipe with brass, it may be of advantage to replace it with an iron pipe,

making it a repair to the piping system instead of an improvement. Rather than install a new boiler, it may be of advantage to make repairs by installing new tubes. Before one decides to increase his capital investment by making a replacement, *it is important to determine how much he is losing in tax savings by not being able to deduct the cost of repairing the item he is planning to replace.*

Here is another matter to consider. Suppose a manager has a machine fully depreciated which he can sell for \$1,000. Obviously this would be a capital gain of \$1,000 and is taxable at 25 per cent, or \$250. Suppose also there are several other pieces of equipment on the books at a depreciated value of \$2,000 and one can sell them for \$1,000. Here is a capital loss of \$1,000 that would wipe out the capital gain of \$1,000. If the net income is \$27,000 and a capital loss of \$1,000 is taken, this will reduce the taxes by about \$570. *Obviously, from a tax angle it is not of advantage to sell in the same year the machine on which there has been a capital gain of \$1,000 unless there is reason to believe that the market value of this machine will drop appreciably within the year.*

Net operating losses can be carried back into the two preceding taxable years to apply as a deduction against those years' income, and the excess loss, if any, that is not absorbed by the income of those years can be deducted in the next two succeeding years. For example, if a net operating loss was sustained in 1948 but there was a sizable profit for 1947, and if the loss in 1948 is carried back to 1947, *one can claim a tax refund* on the payment made in 1947.

Gains and losses from sales or exchanges of capital assets are reported on Schedule D, which is filed with Form 1040. If property is not purchased for purpose of profit, it is not a capital asset. Thus a loss on the sale of the taxpayer's residence or furniture or an automobile or boat used for pleasure cannot be entered on this schedule. The most common capital gains and losses arise out of the sale or purchase of securities, commodity futures, etc., also gains on sale of residences and pleasure cars. The term "capital assets" is defined as property held by a taxpayer (whether or not connected with his business) but not such items as inventorable assets, property held for sale to customers in the ordinary course of taxpayer's trade or business, depreciable business property, real property used in taxpayer's business. It is to be particularly noted that, *although real property used in a taxpayer's business is not a capital assets, this type of property gets a special tax advantage* and is entered on Part 2 of Schedule D headed Property Other than Capital Assets. If the sale of this property results in a gain and the property has been held more than 6 months, the gain would be considered a capital gain and would be entered on Part 1 of Schedule D. If the sale of the property results in a

loss, it is reported on Part 2 of Schedule D and the total amount of the loss is deductible in full from ordinary income.

Long-term capital gains or losses are those resulting from sale or exchange of capital assets held for more than 6 months. *Only 50 per cent of the long-term gain or loss is to be taken into account in computing net income, and in no event is the tax on a capital gain to exceed 25 per cent.* Short-term capital gains or losses are those resulting from the sale or exchange of capital assets held for not more than 6 months. An individual cannot deduct capital losses in excess of \$1,000 in any tax year, but any non-deductible capital losses may be carried forward into the next five succeeding years.

Tax-saving Possibilities in Partnerships

A partnership return (Form 1065) is an information return. No tax is due with the filing of the return, which serves merely to group all items of income and expenses of the business. The amount shown as distributable to each partner, regardless of whether it actually was or will be distributed, is then picked up on the individual returns of the respective partners. All that has been stated above in connection with the individual income tax Form 1040 applies to the partnership return.

Now that the law permits division of income equally between husband and wife, there is no advantage from a Federal income-tax angle in having a business partnership with one's wife. Obviously, however, *taxes will be appreciably reduced if three or more members of the family become partners.* However, the other members of the family should be bona fide partners. For example, if there is a nineteen-year-old son who helps manage the business and devotes all his time to the business and has contributed part of the capital for the business, he could become a partner and in addition to his salary receive a share of the profits of the partnership. However, before one forms such a partnership it would be advisable to consult a lawyer so as to avoid the possibility of the Treasury Department's refusing to recognize the partnership and assessing the full tax as an individual. In determining whether or not a family partnership is a true partnership, the Treasury considers that

1. The degree and quality of work should be that of partner.
2. The capital must originate with the child and be needed for the business.
3. The division of profits must be reasonably based on the capital invested and the work performed.

If the partnership is a sham, the Treasury will not permit division of the profits.

The capital gains and losses of a partnership are segregated from the ordinary business income and carried into the individual partner's capital gain and loss Schedule D form which is filed with Form 1040. *In other words, each partner treats his share of the partnership capital gains or losses as if it were his own capital gain or loss.* If a partnership distributes some of its stocks which are held as investments to the partners as a partial liquidation distribution, each of the partners takes as his basis for his share of these assets a sum equivalent to an allocable portion of his basis for his partnership interest. Thus the holding period of the partners for such stocks runs from the date of their acquisition by the partnership.

This leads to an interesting tax problem, typical of matters that should be referred to an attorney. Assume two partners each initially making a capital investment of \$20,000 in a partnership, or a total invested capital of \$40,000. Assume further that the total assets are now worth \$100,000. Included in the capital assets are certain stocks held for more than 6 months which originally cost the partnership \$30,000 and are now worth \$50,000. If the stocks are sold by the partnership, each partner would have a long-term capital gain of \$10,000. However, if the partnership distributes the stock to the partners and each partner sells his share of the stock for \$25,000, each partner would have a long-term capital gain of, not \$10,000, but \$5,000. This is explained as follows. The fair market value of the net assets of the partnership is \$100,000, including the stock at \$50,000. The stock is one-half of the net assets. The partner's basis of his interest in the partnership is one-half the original investment plus earnings left in the partnership. The assets of the partnership on a cost basis are \$80,000, including the stock at \$30,000. Since the stock is worth \$50,000, the fair value of the partnership is \$100,000. Since the partners are distributing one-half the fair value of the partnership and each partner has a total investment in the partnership of \$40,000 on a cost basis, the basis for the stock is \$40,000 and each partner receives a nontaxable return of capital of \$20,000. If each partner sells his share of stock for \$25,000, his taxable gain is \$5,000 and his remaining interest in the partnership now has a basis of \$20,000. So now the total assets of the partnership are \$50,000. If the partnership should liquidate, since the partners' capital interest is only \$40,000, the partners combined would have a taxable gain of \$10,000 and each one alone a gain of \$5,000.

The above is quite detailed and has been considered only to give an idea of one of the many tax angles that must be considered every time a major change is made in a business.

Some Corporations Considered Personal Holding Companies: An engineering or a similar partnership should not incorporate if 50 per cent or more of the corporate stock is owned by less than six persons and 80 per cent of its gross income is from royalties, dividends, interest, security- or commodity-transaction gains, income from estates and trusts or from rents under certain conditions, as such a corporation would be a "personal holding company."

A personal holding company is subject to corporate normal and surtax plus a special surtax of 75 per cent on undistributed net income up to \$2,000 and 85 per cent of the undistributed net income in excess of \$2,000.

This part of the law aims to discourage individuals from incorporating their income-producing properties or abilities to avoid the higher surtax on an individual.

Federal Income-tax Savings in Corporation Cases

The corporation-income-tax return Form 1120 will next be considered. Substantially all that has been said in connection with the individual-income-tax Form 1040 applies to the corporation return.

Corporations are limited as to amounts which may be deducted for *contributions* to 5 per cent of the net income before deductions.

It is to be noted, however, that a corporation under item 29 of the return *can deduct contributions to an approved stock-bonus, profit-sharing, or annuity plan.* This, of course, is not permitted on the individual or partnership return and is a possible inducement for changing to a corporate form of doing business.

Included under item 30, Other Deductions Authorized by Law, are *Federal old-age insurance tax and Federal unemployment insurance tax.* Federal import duties and Federal excise and stamp taxes are not deductible as taxes but are included under item 2, Cost of Goods Sold.

It may be of advantage from a tax-saving angle to divide an incorporated business into two corporations or to operate one part of the business as a corporation and another part as a partnership. Anyone is free to organize his business affairs in any way he sees fit, but the government does not have to recognize a form of organization that is a sham and for the sole purpose of reducing taxation. Here a lawyer can be of assistance.

Special treatment is provided a corporation for a capital gain or loss on the sale or exchange of land and depreciable property held for more than 6 months and used in a trade or business, provided the property is neither (1) includible in inventory nor (2) held primarily for sale. If the aggregate of the losses is greater, they are treated as if made on the disposition of non-capital assets. If the aggregate of the gains exceeds the aggregate of the losses, it is treated as though from the sale of capital assets.

If the assets of a corporation are sold for an amount greater than the book value, the corporation will, of course, have to pay on the profit, and when the stockholders receive the assets, they also will have to pay a tax on the amount they received over and above the amount they put into the company. *This double taxation could, of course, be avoided if, instead of selling the assets of the corporation, all the stock of the corporation were sold to the buyer by the stockholders.* However, such a transaction should not be attempted without careful checking as to the legality.

Withholding Taxes: The employer withholds income tax from wages and salaries in the amount of 15 per cent of the employee's wages after the amount of the exemptions claimed has been deducted from the wages. An alternative method is to compute the withholding from statutory tables provided by the government. The employer makes returns of tax withheld quarterly (using Form W-1). This form is filed with the collector for the district. With the final return for the year there should be included the triplicate copy of employee's receipt (Form W-2a) and reconciliation (Form W-3). Employers are required to furnish employees with a statement of tax withheld annually before Jan. 31. The form is in quadruplicate, two copies (Form W-2) going to employee, one (Form W-2a) going to collector, and one (Form W-2b) being retained by the employer.

Payment of Federal Social Security Taxes

The Federal Social Security Act is divided into two parts.

1. Old-age and survivors' insurance taxes (Federal Insurance Contributions Act).

2. Federal Unemployment Tax Act. Employers of eight or more persons subject to the Federal Insurance Contribution Act are liable for taxes.

Old-age and survivors' insurance taxes are based upon the first \$3,000 of wages paid by each employer to each employee during a calendar year. The employer pays at the rate of 1 per cent of taxable wages, and payments are due quarterly. The employee also pays at the rate of 1 per cent of taxable wages, and this tax is collected by the employer by deducting the amount from the wages paid. The employer pays the amount deducted quarterly to the Collector of Internal Revenue. If the employer fails to deduct the tax from the employee's wages, he becomes liable for the employee's tax. *No taxes are due on certain exempt employments* such as agricultural labor or domestic service. Included in taxable wages are such items as bonuses and prizes; gifts except personal gifts not related to years of service, quality of work, etc.; the reasonable value of room and board furnished by the employer; commissions; and vacation pay. However, *some items are not included as taxable wages*, for example, the usual voluntary payments made

by an employer to an employee on account of dismissal, sick pay, expenses such as traveling expenses; payments made from company benefit funds for retirement, sickness, or accident disability; employer payments into employee benefit funds, providing the plan is approved by the Federal government. However, employee payments into employee benefit funds are taxable.

Payment of the Federal Unemployment Tax

Employers of eight or more persons in nonexempt employment are liable for the *Federal unemployment taxes*. The taxes are based on the first \$3,000 of wages paid by each employer to each employee. The employer officially pays at the rate of three per cent of taxable wages, but he *obtains a credit up to 90 per cent of the Federal tax on contributions the employer is required to make under an approved State Unemployment Insurance Law*. So, generally, the employer's *payment to the Federal Collector of Internal Revenue* is only about 0.3 per cent. The actual *payment to the state* is somewhat less than 2.7 per cent, as under the experience rating of the state law reduced rates of probably about 1 per cent would apply for a business having a low rate of employee turnover. No contributions by the employee are required under the Federal Unemployment Tax Act.

COMPLEXITIES OF STATE TAXES IMPOSED ON SMALL PLANTS

For an analysis of the types of state taxes applying to small businesses, only the tax laws of the state of New York will be considered. Merely selected important tax laws applying in the respective states will be listed and discussed. The tax situation varies from state to state and creates truly difficult conditions in some of them.

A business located in New York, N.Y., would be subject to certain of the following state taxes.

1. *Initial fee for filing certificate of incorporation* for domestic corporation is \$40. In addition all corporations must pay an *organization tax* of one-twentieth of 1 per cent on par value of authorized capital stock and 5 cents on each share of no-par stock with a minimum of \$10.

2. *Entrance fee for foreign corporations*, which means corporations incorporated in other states, is \$100. With payment of this fee, a certificate of authority is obtained without which a corporation may not sue in the state courts upon any contract made in this state. In addition, a foreign corporation must pay a license fee based upon issued capital stock employed in the state at the rate of one-eighth of 1 per cent of par value of stock or 6 cents per share on no-par stock; minimum tax is \$10.

3. *Franchise tax on domestic and foreign business corporations is based on four possibilities:* (1) 5½ per cent² of entire net income allocated to New York, (2) 5½ per cent² of a statutory “income-plus-compensation” basis allocated to New York, (3) 1 mill on value of business or investment capital allocated to New York, or (4) minimum tax of \$25, whichever of the four is highest. *Two taxes are imposed:* one on the entire net income or

² All rates subject to change by legislature.

business and investment capital of a corporation, plus one on its subsidiary capital. The income, gains, and losses from subsidiary capital are excluded from the entire net income of the corporation. In place of a tax measured by such income, a tax is imposed on subsidiary capital allocated to New York at the rate of $\frac{1}{2}$ mill for each dollar of the first \$50 million of subsidiary capital, $\frac{1}{4}$ mill for each dollar of the next \$50 million, and $\frac{1}{8}$ mill for each dollar over \$100 million.

The franchise tax levied by the state is somewhat similar to the Federal income tax. It is independent of and in addition to taxes as referred to above under paragraphs 1 and 2. Foreign corporations or alien corporations are subject to this tax if they are "doing business" in the state, except where their sole business is interstate commerce. What constitutes "doing business" can be determined only by the facts in each particular case; however, it can be said that, *if a factory or home office is outside New York*, the only activity in New York is the *solicitation of orders* for its products through traveling salesmen or a sales office in the city, and the orders are forwarded to its home office for acceptance and delivery, the corporation is not subject to the New York State franchise tax, because its sole activities in New York are in interstate commerce. If, however, a factory located outside New York *maintains a stock of merchandise* in New York State from which it fills orders, the corporation is subject to the franchise tax. Generally, unless it involves interstate commerce, almost any business activity in New York, except for mere ownership of cash in banks or securities in a safe, is considered "doing business."

4. *Personal income tax on resident and nonresident business owners and employees* is based on net income and capital gains.

The following rates are applicable separately against net income and net capital gains obtained by the owners of even the smallest businesses, whether their businesses are incorporated or privately owned:

| Taxable | | Taxable | |
|---------------------|--------|---------------------|--------|
| Net income | Rate * | Net capital gain | Rate * |
| First \$1,000. | 2 | First \$1,000. | 1 |
| Next 2,000. | 3 | Next 2,000. | 1.5 |
| Next 2,000. | 4 | Next 2,000. | 2 |
| Next 2,000. | 5 | Next 2,000. | 2.5 |
| Next 2,000. | 6 | Next 2,000. | 3 |
| Over 9,000. | 7 | Over 9,000. | 3.5 |

* These rates subject to change by legislature.

This state tax, too, is somewhat similar to the Federal income tax. Exemptions are allowed of \$1,000 for a single person, \$2,500 for a married couple or head of a family, and \$400 for each dependent.

Withholding is required with respect to wages paid nonresidents employed in New York, but the tax applies only to such wages attributable to New York.

5. *Unincorporated business income* is taxed at 4 per cent³ of the entire net income within the state. It applies to any individual partnership or other unincorporated entity conducting a business in New York State. Wage earners and professional men are exempt from this tax. Income may be apportioned to New York if an out-of-state office is maintained. In addition to the flat exemption of \$5,000, an additional arbitrary allowance from the net income of 20 per cent of the net income of the unincorporated business and not to exceed \$5,000 may be made for each active owner or partner. This arbitrary allowance and the amount of same not to exceed \$5,000 are discretionary with the tax commission. It is to be noted that capital gains and losses are not segregated under the unincorporated business tax.

6. *Property taxes* apply to real property generally. Personal property (including intangibles) is not taxed. Property taxes, while mostly city taxes, are administered by various local officials under the supervision of the State Department of Taxation and Finance. Property taxes apply to all real property in the state whether owned by individuals or corporations, residents or nonresidents. Property taxes are based upon assessed valuations determined by local officials and in New York City are assessed at practically their entire or full value. The tax rate for 1948 for New York City was about \$30 per \$1,000 of assessed valuation. The procedure followed in establishing assessed valuations, taxes, etc., varies throughout the state. In New York City all property is assumed to be assessed as of Jan. 25. The assessment rolls are open to public inspection from Feb. 1 to Mar. 15. If assessments are considered to be too high, application must be made by Mar. 15 for correction of assessment. A decision on the application will be made by May 25. An appeal to the courts may be taken from this decision.

The form of application for a correction of the assessed valuation of real estate in New York City used for many years by the Department of Taxes and Assessments covers the three principal grounds for securing relief from excessive or illegal assessments under the New York Charter. They may be designated as follows: (a) overvaluation, (b) inequality, (c) illegality. Quite probably the assessment is not illegal. If the property is considered to be overassessed or the assessment is unequal, then the application for reduction should contain a written statement of the grounds of objections.

³ Subject to change by legislature.

If the market value of the property is less than the assessed valuation, it would seem proper to seek competent legal advice on requesting a reduction in assessment. Although a few years ago property might have been considered overassessed, today, with the increase in rentals and the increase in reproduction cost of the buildings, the old assessments seem reasonable. Cities, however, have already aided inflation by arbitrarily increasing all assessments 15 per cent or more. It is quite probable that some of these assessment increases could be effectively protested and a return to the former assessment obtained.

7. *Occupational license taxes* are generally nominal. They are applied by the state on many businesses. Municipalities also have wide discretion to apply them. If these taxes are arbitrary or unreasonable or discriminate against interstate commerce, the ordinance concerned will probably be held invalid by the courts. For example, a town ordinance establishing a license fee of \$100 for peddlers is excessive, and the ordinance probably would be declared invalid if brought before the courts.

KINDS AND COMPLEXITIES OF ADDITIONAL CITY TAXES IMPOSED ON SMALL PLANTS

In addition to the state taxes as aforesaid, a business located in New York City would be subject to certain of the following city taxes.

8. *General business and financial tax* applies to all industrial and commercial businesses at a rate of $\frac{1}{5}$ per cent of gross receipts over \$10,000. It applies to financial business at a rate of $\frac{2}{5}$ per cent of gross income regardless of amount. This tax like other city taxes is authorized by a State of New York Enabling Act. It is a privilege tax measured by the gross receipts or gross income and applies to any individual, corporation, or other entity doing business in the city. It divides taxpayers into two classifications: financial business and general business. Under the classification financial business are included brokers, commission men, and factors and, subject to the determination of the comptroller of the city of New York, *dealers in merchandise* where the spread between cost and selling price is analogous to a commission and does not exceed 3 per cent of cost of goods sold. All other businesses come under the classification of *general business*. To clarify this matter, let us assume that a butter dealer had gross sales of \$2 million and a gross income of \$50,000. Under the *general business* tax he would pay a tax of $\frac{1}{5}$ per cent on \$2 million, or \$4,000; under the *financial business* tax he would pay a tax of $\frac{2}{5}$ per cent on \$50,000, or \$200. If the butter seller's spread between cost and selling price did not exceed 3 per cent, he would, of course, be entitled to pay the financial business tax.

Form 49B-4503 120149 114

ORIGINAL

THE TAX DUE ON THIS RETURN IS PAYABLE ON OR BEFORE JUNE 15, 1950.

NOTE—A taxpayer who began business after May 1, 1949, and is required to file a return for a base period extending beyond May 1, 1950, may file such return on or before August 1, 1950, and pay the tax due at such time.

IMPORTANT

Where the taxpayer has filed returns for prior years, and no return is due in the current year, this form should be returned to the Bureau of City Collections accompanied by a statement signed by the taxpayer setting forth the reasons why no return is due.

**THE CITY OF NEW YORK—DEPARTMENT OF FINANCE
BUREAU OF CITY COLLECTIONS**

GENERAL BUSINESS TAX RETURN

Return of Excise Tax on Gross Receipts Pursuant to the General Business and Financial Tax Law as Embodied in Chapter 46, Title B of the Administrative Code

GROSS RECEIPTS FOR THE CALENDAR YEAR 1949

(This return must be filed on a calendar year basis if the taxpayer was engaged in business during the entire calendar year 1949)

or Period Begun..... 19..... and Ended..... 19.....

Taxpayers having receipts from sales in interstate or foreign commerce, or sales that are non-allocable and non-taxable shall also file Form 49B-1 as part of this return.

**PRINT PLAINLY BELOW
NAME AND ADDRESS**

Enter Registration or File Number Here

Page 1 of Return
FOR DEPARTMENTAL USE ONLY

L.....
T.D. \$.....
T.P. \$.....
B. \$.....
P.....
T. \$.....

Checked by.....
Billed by.....
Folio No.....
Date.....

BTX

Please correct any error in above imprint

KIND OF BUSINESS.....
(Indicate clearly type of business, for example: Manufacturer—Ladies' Dress; Wholesale Furniture; Automobile Service Station, etc.)

DATE BUSINESS COMMENCED IN N. Y. C...... **ANNUAL RENTAL IN N. Y. C. \$**.....

Item No. **GROSS RECEIPTS**

| | |
|--|---------|
| 1. Wholly taxable receipts from sales in trade or business, less sales returns | \$..... |
| 2. Allocated receipts from sales in interstate commerce (Item 28—Schedule A, or Item 54—Schedule C, of Form 49B-1) | \$..... |
| 3. Wholly taxable receipts from business of a service nature other than a profession, vocation, etc. | \$..... |
| 4. Allocated receipts from industrial services, transportation services or radio broadcasting (Attach schedule) | \$..... |
| 5. Receipts from profession, vocation or personal services, or commissions received by a manufacturer's sales representative, an independent sales agency or a selling agent | \$..... |
| 6. Receipts from dividends and interest, other than from controlled corporations (Dividends and interest received from controlled corporations must be reported on Form 49F) | \$..... |
| 7. Wholly taxable receipts from rentals of tangible personal property or royalties | \$..... |
| 8. Allocated receipts from rentals of tangible personal property or royalties (Attach schedule) | \$..... |
| 9. Receipts from premiums received by an insurance company from risks in New York City | \$..... |
| 10. Receipts from commissions and fees earned as insurance agent, broker, underwriter or adjuster | \$..... |
| 11. Other receipts from commercial activities (Attach schedule) | \$..... |
| 12. Total gross receipts to be used as a measure in computing the tax (Items 1 to 11, inclusive) | \$..... |
| 13. Tax due the City of New York—1/5 of 1% of Item 12 | \$..... |
| 14. Penalties and/or interest | \$..... |
| 15. Total tax, penalties and/or interest (Item 13 plus Item 14) | \$..... |

MAKE CHECK, DRAFT OR MONEY ORDER PAYABLE TO THE CITY COLLECTOR

AFFIDAVIT

I swear (or affirm) that this return of gross receipts, including the accompanying schedules or statements, has been examined by me, and is, to the best of my knowledge and belief, a true and complete return, made in good faith, for the period stated, pursuant to Chapter 46, Title B of the Administrative Code and the regulations issued under authority thereof.

Sworn to and subscribed before me

(this..... day of..... 19.....)

Signature of officer administering oath..... Agent, officer of corporation, trustee, etc.

My commission expires..... 19..... Title.....

DO NOT MAIL COIN, CURRENCY OR STAMPS IN PAYMENT OF TAX.

Cash payments must be made only to the Cashier at his window. Such payments must be presented before 3 o'clock P.M., Saturdays 12 Noon. When payment is made the Cashier receives therefor by a stamp in the space provided hereon.

C. B. Folio **CASHIER'S STAMP**

Receipt of Payment Will Be Recorded by Machine in This Space.
Do Not Accept Handwritten Receipt.

The general business and financial taxes are based upon gross receipts received in or allocable to the city, and the law authorizes the comptroller to provide for apportionment of receipts. Assuming a business enterprise is "doing business" in New York City, *i.e.*, it has an office or maintains a stock of merchandise from which local deliveries are made or is in some other respect "doing business" in the city of New York, not only shipments made in either New York City or in New York State are taxable but also

the gross receipts of sales of merchandise located elsewhere in the state are taxed if the merchandise is delivered in the city. Also the gross receipts of sales of goods located in the city for shipment outside the state of New York and even gross receipts of sales of goods located outside the state of New York and shipped into the city of New York are allocable. All other receipts, including sales from outside the United States to a customer in New York City or from New York City to a point outside the United States, are tax exempt.

It is strange but nevertheless a fact that, as required by the United States Constitution, *all sales in interstate commerce are allocated and taxed, while sales involving points outside the United States are exempt*. It is to be noted that a business located outside the state selling in New York City through brokers may be subject to the tax on its gross receipts not only on the gross receipts of the sales made by brokers in the city but on the sales made direct by the business located outside the state to customers in the city. Only the following United States excise taxes are not taxable as gross receipts, providing such excise taxes are shown on the evidence of charge or sale: (a) Federal tax on admission and dues; (b) Federal retailers excise tax on jewelry, furs, fur articles, toilet preparations, and luggage; (c) Federal tax on transportation of property; (d) New York State retail gasoline tax; (e) New York City sales and compensating-use tax; (f) New York City tax on occupancy of hotel rooms.

9. *Retail sales tax* (collected by seller from buyer) is levied at the rate of 2 per cent on sales of tangible personal property and on utilities, services, and restaurant checks of \$1 or more. While this tax is called a sales tax on personal property, it is actually also a tax on labor. This tax applies to the total receipts from taxable sales whether received in money or otherwise without deduction for cost of property sold, materials used, labor, transportation prior to sale, services, or interest or discount paid. If property is purchased for resale, it is necessary for the purchaser to give the vendor a resale certificate bearing the purchaser's registration number if he, the purchaser, is to avoid paying the tax to the vendor.

The rate of tax is 2 per cent. That is, the vendor must remit to the city what he actually collects, but not less than 2 per cent of his taxable sales. The purchaser pays on fractions of \$1 according to the following:

| Sales Price | Tax |
|-------------|---------|
| \$0.01-0.16 | No tax |
| 0.17-0.66 | 1 cent |
| 0.67-1.16 | 2 cents |

The penalties for delinquency in making returns are 5 per cent plus 1 per cent per month, but the city comptroller may remit penalty and collect 6 per

cent interest per annum. For failure to collect the tax from the purchaser or for willfully falsifying a return, etc., the penalty is \$1,000 or one year in jail or both.

The city comptroller is empowered to make, adopt, and amend regulations appropriate to carrying out the purposes of the law. *It would be inadvisable for anyone to conduct any negotiation with the comptroller pertaining to regulations except through an attorney.*

The vendor collects this tax from the purchaser and remits it to the city. The vendor acts as trustee for the city, and the vendor including the officers of a vendor corporation are personally liable for the tax collected or required to be collected. Recently a coal dealer in New Jersey who maintained sales offices in New York was required to pay the sales tax on orders for coal which were accepted in New Jersey and the coal delivered in New York City. Shipment made from points out of the state, such as shipments f.o.b. Saginaw, Mich., are not subject to sales tax, nor are shipments from New York City to points outside the city. If the New Jersey coal dealer had sold his coal f.o.b. New Jersey, he would not have had to pay the New York sales tax.

Sales tax does not apply to containers, packing materials, or labels, but sales of containers which must be returned by ultimate consumers of merchandise are subject to tax. Sales of materials to a factory which uses them for the manufacture of merchandise to be sold are not taxable, as they are sales for resale.

Food products are generally nontaxable; however, the nontaxable items are listed by the regulations, and sales of taxable personal property are taxed unless some specific exemption can be found. For example, chocolate sirup is a food, and sugar products are listed as nontaxable; nevertheless, sirups are listed as taxable under the regulations. It can well be argued that chocolate sirup is nontaxable. This is an example of a type of case that should be referred to an attorney for consideration with the city comptroller so as to avoid the possibility of being assessed a tax on all sales of this item even though the tax on this item has not been collected from the consumer.

Installation charges are taxable unless they are billed separately. *All Federal excise taxes may be excluded before computing the sales tax, provided such excises are separately stated and billed in addition to the selling price of the commodity. It is immaterial that the Federal taxes may actually be imposed upon the manufacturer or dealer and not upon the consumer. To illustrate, if the selling price of an automobile is \$1,000, and Federal manufacturer's excise is \$70, and the excise tax is separately stated, the sales tax applies only on the \$1,000 and would be \$20. Similarly, if the selling price of jewelry is \$1,000, the Federal tax is 10 per cent, or \$100, and the bill is prepared correctly as follows:*

| | | |
|----------------------------------|--------------|---------|
| Jewelry sale price | \$1,000 | |
| Federal tax at 10% | \$100 | |
| New York City sales tax 2% | 20 | |
| | <u>\$120</u> | 120 |
| Total | | \$1,120 |

The sales tax would be only \$20 as indicated, and the sales tax would not apply on the Federal tax. If the bill is incorrectly prepared in the following fashion, the sales tax applies also to the Federal tax, namely:

| | | |
|----------------------------------|----------------|---------|
| Jewelry sale price | \$1,000 | |
| Federal tax at 10% | 100 | |
| | <u>\$1,100</u> | |
| New York City sales tax 2% | 22 | |
| Total | | \$1,122 |

A tax credit can be taken on taxes paid on returned merchandise and uncollectable accounts. The tax applies to sales of utility services (such as electricity, gas, refrigeration, and steam) for domestic or commercial use, but not for industrial use. It may be of advantage in certain businesses to install a separate meter to avoid the tax on industrial use.

10. *Compensating use tax* is another city tax of 2 per cent on the retail purchase price of tangible personal property used in the city. This tax is designed to reach purchases shipped into New York City for use there on which a sales tax has not been paid and on which a sales tax would have been due if the sale took place in New York City. While the vendor is supposed to collect the tax for the city, if he does not do so, the purchaser is liable.

New York City also applies taxes to utility gross receipts, conduit companies, occupancy taxes, hotel rooms, and pari-mutuels.

THE VARIETY OF TAXATION THROUGHOUT THE LAND

It is impossible to give a list of all the taxes imposed by the various states or municipalities. The following are some of the types of taxes that may be of interest and should prove the need for simplification:

In Pennsylvania many communities impose mercantile license taxes (gross-receipts taxes). These gross-receipts taxes are frequently collected twice, once by the community, again by school district. Many Pennsylvania communities impose earnings taxes at the rate of 1 per cent of the employee's gross earnings without any deduction or exemptions, which are deducted from the employee's wages and paid by the employer. In ad-

dition to the community's levying such a tax, frequently the school district superimposes an additional tax of $\frac{1}{2}$ per cent on the earnings. The payment of these taxes by the employer involves considerable clerical expense and the nuisance of determining which community is entitled to the tax when the employee works in one community and lives in another. In St. Marys, Pa., there is a tax on employers of \$3 per employee. In the Pittsburgh school district there is a per capita tax of \$5 which must be deducted from the employee's wages and paid by the employer. If the employee is married, the tax is \$10, \$5 for the employee plus \$5 for his wife. In Virginia there is a tax on gross purchases that frequently is collected twice, once by the state and again by the city. If the merchandise is purchased in Virginia and sold in West Virginia, the seller in West Virginia is subject to gross sales tax, which is oftentimes collected twice, once by the state and again by the city. This list could be extended, but it gives some idea of types of taxes imposed.

SUMMATION ON TAXES

Anyone who has read the foregoing thoroughly is bound to agree that taxes, the paying of taxes, and the avoidance of overpayments in taxes are intricate, difficult, and involved subjects. Since tax authorities cannot be trifled with and even "ignorance" is not accepted by them as excuse for having committed errors or oversights, the small plant manager will do well to make taxes a definite subject of interest.

Equally, those who have public influence should come to realize that the present rates of taxes not only represent a heavy burden on the small enterprise, on the owner, and on every employee but that there is definitely a point where too heavy a tax burden first stifles and then inhibits individual enterprise.

The steep increase in Federal tax rates which has been imposed during the last 20 years is serious enough in itself, but in combination with increasing state taxes and rising municipal taxation, a situation has definitely been created which is serious for the small enterprise.

The small plant manager not only has to attend to taxes but has to manage alone many other activities besides and concentrate his thinking on his management tasks. In addition to paying the taxes, he nearly always has to incur expenses for clerical and advisory help to ensure proper compliance with the law. There is always the danger of having forgotten an item or of having overlooked a technicality.

Hardly can a subject so intricate as taxation be summarized in a few practical know-how rules, but nevertheless it might be well to remember the following:

1. The best way of *paying taxes* is to
 - a. Find out which taxes have to be paid
 - b. Learn in detail which regulations exist for each one
 - c. Comply as best and as honestly as possible
 - d. Avoid delays; they are costly and draw fines
2. *Tax savings* can and should be made by
 - a. Careful analysis and interpretation of the tax laws
 - b. Thorough recording of financial conditions
 - c. Consultation with truly informed experts and tax officials
 - d. Being honest. Dishonesty has never paid for long in business and does not help in saving taxes.

CHAPTER 18

HOW TO MAKE SAVINGS AND USE PROFITS: AN ACTUAL CASE WHICH PROVES THAT KNOW-HOW MANAGEMENT PAYS

BY

JAMES B. MURRAY, *Vice-President*
Murray Manufacturing Corporation
*Brooklyn, N.Y.*¹

THE MEANING AND OCCURRENCE OF PROFITS

In the last two decades propaganda has attached a stigma to the profits of business. Others have vigorously opposed the opposers and have declared profits the incentive for all enterprise and the main aim of all economic efforts.

The conflict over profits today arises from a misunderstanding of terms. Language is a tool often misused. Many pour random words into the funnel of communication and leave the listener to sift out the true import of the subject. Ambiguous language has given the public several alternatives and so planted the seed of doubt. The word "profit" has different meanings to the banker, the economist, the union leader, the tax collector, and the businessman. Generally speaking, profit in a business enterprise is the amount by which the returns exceed the expenditures. It is the reward of the enterpriser who takes the risks of the business.

Another concept has profit as one of the costs of doing business. This concept fits all financial elements into six simplified basic categories:

1. The receipts from customers (also called net sales or income)²

Against this are applied five basic costs of doing business:

2. The cost of goods and services bought from others

¹ The author is vice-president of the Murray Manufacturing Corporation, Brooklyn, N.Y., which manufactures electrical distribution and safety devices for homes and industry.

² Fred G. Clark and Richard S. Rimanoey, *How We Live*. New York, D. Van Nostrand Company, Inc., 1944, p. 26.

3. The cost of human energy
4. The cost of tools wearing out
5. The cost of payments ordered by government
6. The cost of using tools.

"Tools" are all the physical assets of the corporation and profit is what is due to the owners of tools for making them available. If the business is not able to meet this last cost over the years, the persons owning these tools are not willing to provide more. Any operating statement can be simplified so that the various expenses or costs fall into one of these five categories. What is received from the customer for goods sold should be apportioned to satisfy each one of these costs in order for the enterprise to survive over an extended period.

Actual observation and facts bear out that by no means do all manufacturers make profits. Exorbitant or even too large profits are rare, and especially within the small plant group, there are very few companies "rolling in profits." Statistics prove that within this last group in even good years

15 per cent of the entire number of small plants are being liquidated, given up, closed, or foreclosed.

50 per cent of all the small plants break just about even but seem to do well and survive.

35 per cent of the whole group actually make and report profits.

All this does not indicate undesirable profit conditions but rather reflects the results of the efforts which the small plant group makes to meet all its costs, to preserve and create new tools, and to pay for their use.

PROFITABILITY

Although the word "profit" has been used in the title of this chapter, what really is to be discussed is a certain attribute of the business enterprise that should be called "profitability." To be successful, a business must have this characteristic. Let us illustrate. The president of one corporation may attempt to impress the stockholders at the end of a fiscal year by showing an operating-statement profit. The manager of another company, untrammelled by similar intentions, may have taken what might otherwise have been distributed as dividends to invest it in higher wages, more research, better equipment, or a larger reserve. The latter company has used most of the rewards of the enterpriser, not for distribution of profits in a financial sense, but for distribution of profits in an economic sense.

Good management must operate in such a manner that it not only can make profits but also *strike the right balance in using part of the profits for economic distribution and the other part for financial distribution.*

The degree of success of any company depends on the wisdom with which this distribution is managed.

Profitable operating techniques do require a capital expenditure, or in the words of a familiar axiom, "You have to spend money to make money." Methods of financing are beyond the scope of this chapter. For purposes of discussion we must assume a going concern with working capital available from the owner or obtainable through loans and equity financing and mostly through plowed-back earnings.

THE PROFIT MOTIVE

The "profit motive" has been described as the motive on which all economic effort depends. Although it may be true that our system of free enterprise depends to some extent on this motive, it is hardly correct to say that it is the prime force motivating all managers of large or small business. The individual investor or lender to a corporation expects, justifiably, a profit, which to him becomes a return for his risk. But for a majority of the men actually engaged in business and especially in small plants, profit ranks well below many other more important motives. As mentioned above, many small plants are operated without profit, and it is well known that most of them are kept alive because there is a hardy group of individuals who would rather run a small plant without profit than a big one with profit.

The Murray Manufacturing Corporation, for instance, has always been operated by *men who derive their main profit in the satisfaction of making products of their own design and in their own way*. The business has been an outlet for inventiveness. In the past this talent has designed and directed the manufacture of copper radiators to heat some of the tallest buildings in the world; made rear-axle housings and other parts for automobiles; produced the most efficient trench-mortar shells for the armed services in both wars; and now manufactures electrical safety and distribution devices for homes and industries. This business gives its managers the satisfaction of knowing that it has employed a steadily growing number of people and furnishes employment for some 400 workers. In 1905 when we were making electric signs, we employed about 25 workers. At the same time, it gives the managers a happy association with other leaders of business with similar interests. What a dull and sterile thing would any business be if its management were motivated by profit alone!

HOW PROFITS ARE DETERMINED

Although we are concerned with the attribute of management called "profitability," we must lean on the terms of the accountants to narrow the

THE MURRAY MANUFACTURING CORPORATION, BROOKLYN, N. Y.



The factory, fifty years after its foundation in 1899. The center building was erected in 1906. The company employed 25 men.

scope of our discussion. For the purpose of establishing the financial results of management, the accountants speak of three types of profit. They are

1. Gross profit
2. Operating profit, often called operating income
3. Net profit.

The gross profit can be calculated by subtracting the factory cost from the sales revenue.

When the administrative expenses and the selling expenses are subtracted from the gross profit, we are left with the operating profit, and the net profit is found by adjusting the operating profit to consider "other income" and "other expenses" and "taxes." Net profit is used to pay interest for bonded debt, dividends to stockholders, and some of it is called surplus.

The following tables will illustrate these relationships:

| | |
|---|---|
| 1. Net Sales Receipts | 3. Net Sales Receipts + or - Other Receipts |
| <div> <div>minus {</div> <div>material costs</div> <div>labor costs</div> <div>factory expenses</div> </div> | <div> <div>minus {</div> <div>material costs</div> <div>labor costs</div> <div>factory expenses</div> <div>administrative expenses</div> <div>selling expenses</div> <div>other expenses</div> <div>other income</div> <div>other adjustments</div> <div>all taxes</div> </div> |
| gives Gross Profit | gives Net Profit |
| 2. Net Sales Receipts | |
| <div> <div>minus {</div> <div>material costs</div> <div>labor costs</div> <div>factory expenses</div> <div>administrative expenses</div> <div>selling expenses</div> </div> | |
| gives Operating Profit | |

A discerning management looks very closely at its operating profits, *i.e.*, the difference between the total cost and the sales receipts. As is evident from the table, *this profit can be increased in two ways (1) by aiming at increasing the sales revenue, (2) by decreasing the total costs.* Total costs have been broken into two important divisions: the factory cost and the general expense.

Under factory cost we have

1. The material cost
2. The labor cost
3. The factory expense, or overhead as it is sometimes called.

Under general expense we have (4) the administrative expense, which usually consists of such items as executive salaries, legal charges, telephone, telegraph, and similar burdens; (5) the selling expense, namely, salaries of salesmen, advertising, commissions, etc. These accounting terms are useful language tools for the businessman, but he knows that profits are not made through accounting. Profits can be made only through good management. Accounting merely records management's success or failure.

HOW CAN PROFITS BE MADE?

More Sales and More Profits through High or Low Prices

One way of increasing sales revenue is through *high prices*. But when prices are high, this usually means smaller volume. By setting "high" prices we mean pricing and charging far above the actual costs—up to what the traffic will bear. In a free, peacetime economy and under normal

conditions it may be considered good practice by some, but mostly it is shortsighted to seek a very large profit by asking an extraordinarily high price. No one should ever forget that in a free economy the customer is always the deciding arbiter. It is he who employs both the workers and the management of business. He is always free to reject the product and save his money or buy some other product.

When the Murray Manufacturing Corporation was in the radiator business, it made a patented product of stamped copper that was lighter and much more efficient than those of the existing competition. The radiator therefore could be sold at a good margin above its cost, but still it was priced to compete with the cast-iron products. The customers preferred the copper radiator because of its inherent advantages and were willing to pay for know-how and inventive skill. The new product "swept the market." This was an exceptional case. However, it does illustrate that patent rights, a good product, and a long-range price policy do afford opportunities for making profits through high prices.

The second method of increasing sales revenue is by *decreasing the price to a point where only a very modest profit per piece is realized*. This places the product within the price range of a larger market and may reward the manufacturer with an opportunity for mass production. Most electric switches are of standardized design, they have a wide application in the power-distribution field, and by keeping prices as low as possible they appeal to the mass market. Custom-built electric equipment such as special panel boards belong in the job shop, and the customer is willing and should give this type of manufacturer a larger margin of profit because of the custom design and additional facilities needed to make the special products.

More Profits through Better Management and Savings

Possibly the best and most varied field for making profits is through *cost reduction and savings obtained by better management*. But the fruits of this policy are not gathered over night. It demands firm management decision and a tenacious adherence to the objective.

Savings in Material

Material savings can be effected in four ways:

1. Through *judicious buying, i.e., by selecting the right supplier with the lowest price*
2. By buying in *economic quantities*

3. By using a system of material control and production planning that will enable the manufacturer to carry a *minimum stock* of raw materials
4. Through *standardization* of parts.

In the years immediately following the war, purchasing had to keep the plant supplied with raw materials at almost any cost. In many plants a few men with little or no experience in purchasing were assigned to the purchasing department as expeditors. They soon became very astute in the art of lobbying. They would visit the plants of the suppliers and by steady but tactful pressure ensure that materials were delivered according to schedule. These men were responsible for keeping their plants running at capacity during the time when they were catching up on a backlog of orders. It was felt that the large emphasis put on expediting during the immediate postwar period resulted in securing many customers who would be retained in the years to come.

In today's economy the job of the purchasing agent is reverting to its former function, namely obtaining the specified raw material of the best quality at the lowest price from the most reliable supplier.

One should try to avoid buying from only one source. Constant field investigation often uncovers another supplier who because of new and better equipment has been able to manufacture a less expensive product.

The technical assistance and advice of a vendor should never be overlooked or underestimated. Many of them employ sales engineers who help the plant designer to select a suitable material. Our company has received the solution to many metallurgical problems by listening to the advice of the technical staffs of steel and copper vendors. They know it is good policy to help solve the customer's problem. This extra service is usually repaid by steady business.

The best suited quantities to be bought are determined by balancing the savings through a quantity discount versus the cost of plant storage. One could buy sawdust in carload lots, but the savings would be very small compared with the amount of valuable floor space for storing the absorbent. In determining the "most economical quantity" to be bought, the purchasing agent must start with the number of products scheduled for production and then consider available storage space.

Purchasing and production are more closely allied, perhaps, than any other branches of management. In a small plant the purchasing agent can and should work closely with production planning and control. If he receives a request for 5,000 units of a certain part, but 10,000 is a more economical ordering quantity, he may find, after consultation with the pro-

³ See also Chap. 12, How to Get Best Facilities and Material, p. 293ff.

duction department, that the same product will be manufactured again within perhaps 4 months—and so place the order for the larger quantity. However, very often, when operating at capacity, space limitations plague the small plant operator. This factor may force the purchasing agent to order a smaller quantity than would be the very best for savings.

For a plant making a multiplicity of products, *a well-planned method of inventory control is the prerequisite for savings in material inventories.* We use the perpetual-inventory system and do not work to “low points.” As a general policy, we buy only material that we expect to fabricate within 2 or 3 months. When inventory control and purchasing are tied closely with sales forecasting and production planning, it is possible to order raw materials for specific production runs and keep deadwood out of the store-room. Our production schedule is decided upon for 3 months ahead, and a bill of materials for every product is sent to the inventory-control section for survey. Inventory cards for raw materials and purchased parts are posted, and deficient items are requisitioned from the purchasing department.

Standardization of parts is one of the functions of the design department. Its rule is “Never design a new part if an existing one can be adapted to do the job as well.” If this rule is followed, it can save many drawing pencils and earn for the engineers the blessings of the purchasing agent. As a constant reminder, we tack a sample of every part currently made on a long panel in the drafting room.

Savings through Better Equipment

Technological improvements have steadily increased the productivity and standard of living of the American workingman by approximately 2 per cent a year over the past 100 years. In order to keep pace with this industrial trend, the manufacturer must ever search for new and better machines and equipment.

Depreciation reserves are the common protection for losses in value of machines, but today management is faced with the problem of financing and replacing obsolete equipment at prices far above the original cost of first acquisition. Tax laws have not made due allowance for this inflationary problem, nor are they very realistic about the time allotted for depreciating equipment. Unless the depreciation of new machinery is accelerated by a change in tax laws, the manufacturer must continue to dip into earnings as a source of capital for replacement of old, obsoleted equipment, and no savings can be made.

Punch presses account for the largest share of our company's fixed assets, and it is the job of the tool and die department to *keep the machines working at high capacity and efficiency.* By such continued use, savings are made,

and additional savings can be derived from the most careful choice and selection of the machines.

Over the years Murray Manufacturing Corporation has assembled a variety of punch presses that enables us to *utilize on most of the machines almost any laborsaving tool* that can be designed in the die department. Creative and ingenious tool designers can crowd a lot of work into one stroke of a press if they are not shackled by inadequate press capacity. Our investment has paid off.

The purchase of equipment is mostly a matter of simple economics, combined with an up-to-date knowledge of new equipment. Formulae have been devised to assist the manufacturer to make a decision on the purchase of new tools and equipment. These are helpful where the decision is a close one. But in most cases, the small plant operator can get along with common sense and simple arithmetic.

A few years ago we found that, if we cleaned certain metal components thoroughly of oil and dirt, we could facilitate the final assembly. Thus we cleaned some fittings before they were electroplated, but it soon was found to be better to clean all fittings. This decision presented a need for more cleaning equipment. The cleaning method then in use was a vapor degreaser. It was calculated that by this method \$6,000 worth of solvent would be used per year. In addition two men working under disagreeable conditions would be needed. Our engineering department began, therefore, the *search for a more economical method*, and a rotary-type washer using an alkaline detergent as a cleaning agent was discovered in a noncompetitor's plant. The machine cost \$5,000. It did the job well, had the capacity of the unsatisfactory vapor degreaser, could be operated by one man, and used only \$500 worth of detergent per year. We did not ponder over this decision.

Savings in Worktime

Whenever we aim to obtain savings in worktime, we strive to shorten the time between the first operation (let us say the shearing of sheet steel) and the final operation (the packaging and shipping of the finished switch box). The engineers refer to this as the "production cycle time," and to abbreviate it the production manager must plan, schedule, control, and coordinate the manufacturing departments of the factory to effect a smooth and quick flow of work. As a result more work is turned out, more sales can be made, and the working capital is better utilized.

The possibilities of obtaining savings through shortening the production cycle time and avoidance of idle times are always present. Small plant managements in particular would do well to investigate these possibilities and to compare the time cycles in their plants with those of larger firms in

their field of manufacturing. If the comparison is unfavorable, they might well turn their attention to production planning and control. It is here that savings in worktime are born.

Savings in Work Space

A good plant layout, so vital to most phases of efficient plant operation, is particularly important when we consider obtaining *savings in form of work space*. There are not many stereotyped layouts for the great diversity of manufacturing plants. In general it may be said that the savings which can be obtained from a most carefully considered layout consist of savings in transportation, handling, better utilization of the floor area, placement possibilities for more machines, all of which gives more work, more sales, and more profits through lower costs.

Like many other manufacturers, our company was confronted with a space problem when we converted back to peacetime production after the war years. During hostilities we had expanded greatly and acquired much additional heavy equipment for the manufacture of welded trench-mortar shells. We had accumulated a heavy backlog of orders for electrical switches and decided that volume was more important than variety. We therefore began to plan a most effective and lowest cost layout on the basis of the production of five important products.

The first step in the procedure was to *design a process flow chart* listing all operations, storages, and transportations necessary for the manufacture of these five products. These charts helped to visualize the process and enabled the engineers to eliminate unnecessary elements, combine operations, and select the most desirable equipment. At the same time we constructed a lucite, three-dimensional *scale model* of the factory, along with wooden identification models of presses, assembly benches, and other vital equipment.

The principal advantage of the three-dimensional model over the template method is that it is easily recognizable and more open to the critical eye of persons who may not be able to visualize template layout properly. Although it is costly, it is good insurance on a major layout change especially where heavy equipment is involved. If only the cost of one mistake in placing a big press is saved, the additional cost of this three-dimensional layout is amply justified.

Ours is now a multistoried plant. It has grown little by little over the last 45 years. There are many inconspicuous but serviceable areas that could easily be overlooked when the plant is not considered as a whole unit. *We try to evaluate every square foot of floor space as a source of revenue to the company.*

The microfilming of file records offers a method of space saving that may be very appealing to the harassed office manager. We were able to set up a new direct-mail advertising department by condensing an area occupied by files into a few shallow drawers of microfilm.

Savings in Work Operations

Savings in work motion are the stock in trade of the industrial engineer. For studying operations, his tools range from the right- and left-hand process chart to elaborate micromotion analysis. Stop watches, time studies, work simplification, and the savings obtainable through them are so well known that these kinds of savings are only briefly mentioned.

But there are equally if not more important possibilities for obtaining savings in production work as well as in assembly operations through the *use of jigs and fixtures*. The majority of ours have emanated from the drawing boards of the tool designers and mechanics. In our plant the most remarkable achievement of this kind is the fixture for assembling one of our safety switches. It is one of our fastest moving items and one to which much study had been applied to improve the efficiency of its manufacture. The switch is of bakelite construction and involves the assembly of 35 fittings and screws. Unaided by a fixture it would take a girl about 7 minutes to assemble this piece. After motion studies our master mechanic designed a fixture that with the aid of an air screwdriver enables a girl to turn out twice as many with less effort.

There is no doubt that the small manufacturing plant involved in repetitive assembly operations can and should afford to pay the salary of a man who, working with the industrial engineers, devotes part of his time to the design and development of jigs and fixtures. *In this regard the foremen should not be neglected.* It has been our practice to have foremen take courses in time and motion study in order to make them aware of motion economy and foster their ideas for workplace improvement.

Savings through Less Handling and Mechanized Transportation

It has been said that *handling costs* represent 20 per cent of the cost of manufacture today. It is therefore important especially for the small plant management, where cost is bound to be much higher, to *investigate developments in materials handling and make provision for the use of conveyors, fork-lift trucks, pallets, and other modern handling equipment.*

During the war, when most of our facilities were devoted to the manufacture of welded trench-mortar shells, we conveyORIZED our plant from start to finish. From the cutting of the steel to the final inspection the shell never moved without the aid of the conveyor.

The conveyor not only saved much labor in handling but also served as a valuable storage facility. Where storage space for work in process was critically scarce, the conveyor was snaked overhead to provide the necessary reservoir for succeeding operations. The savings in costs were great indeed.

Savings through a Safety Program

Industrial safety is a practice that should not be overlooked in the small plant when savings are desired. A comparatively small expenditure may save many times its amount in the form of lower workmen's compensation insurance premiums. Premiums are calculated from a base rate for a type of industry and corrected by an "experience factor." This experience factor reflects the frequency and severity of accidents in each company over the 3 years preceding the last year. Last year, because the number and severity of accidents were below average during the "experience years," we were given credit for 1948 of over \$5,000. On the other hand, a very severe accident during that period, such as the loss of a worker's right hand in a press, might have cost us an additional \$5,000 in our premium.

Every plant should have an organized safety program. The nucleus of such a program is usually a safety committee, eternally vigilant to detect unsafe practices in the plant. It meets periodically to analyze any accidents that may have been caused in the interim since the last meeting. It goes without saying that the management observes all normal safety precautions such as the proper guarding of power presses, the wearing of safety glasses, and good housekeeping. It is a sad lesson of experience that the monotonous routine of modern industry makes the average man unconscious of the industrial hazards surrounding him. Safety regulations must be enforced by alert supervision. In the end this gives not only financial but also human profits.

HOW TO USE SAVINGS AND PROFITS

The preceding sections presented some of the practices for improving the profitability of the small plant by efforts at savings and profits obtained through better management. This section will describe some of the *uses of savings and profits*.

It may well be that the company fails to show a profit even though it has the attribute of profitability. External factors such as vigorous competition, arid markets, or serious economic disturbances may keep the sales revenue down. Nevertheless, as stated before, the proper distribution of savings and profits in the most intelligent way determines the degree of success, and should, therefore, be most carefully studied. Management can use savings

for its own benefit and that of its people, for the benefit of the community, the consumer, and the economy. If improperly managed the savings may benefit the tax collector most, a result which few managers would relish.

Use of Savings for Sales Research

Of all the activities which might be benefited by allocating to them savings and profits, *sales research* is probably the one deserving it most and promising good chances for progress to management and employment for all its people. Its main objectives should be to survey markets and estimate product sales potentials. This gives the small plant manager more assurance that his development research is well directed. Sales research may well cover also prices and pricing, competition and competitive practices, packaging, advertising techniques and effectiveness, and quite a few other subjects. They are basic in assuring progress for all.

Use of Savings for Product Research and Development

Next in basic importance is the use of savings and profits for *product research and development*. Without progress in products the plant soon stagnates, sales fall off, and workers have to be dismissed. With best knowledge of sales and of products best employment can be provided.

We have in our engineering department a staff of development men and modelmakers as well as adequate laboratory apparatus to permit them to test the electrical and thermal characteristics of their designs. Most of our products must be made in accordance with the National Board of Fire Underwriters standards. Therefore many tests are necessary to determine if the product meets the specifications of that Board.

We know that without our research facilities we would lag behind the industry. We have no definite percentage or rule for allocating funds to product research. But we allocate at all times as much as we can.⁴

Use of Savings to Compensate Employees

Next to these basic activities *savings and profits should be used to pay wages sufficient not only to support the workers and their families but to permit them to put aside some savings*. Furthermore, the wage rates should be equitably set in relation to each other.

An underpaid or even poorly paid employee is of no good in the small plant. To avoid wage and salary inequities, management must study and evaluate job contents by measuring all jobs with the same carefully determined yardstick. This job evaluation in a small plant may well be done by

⁴ See also Chap. 14, How to Do Technical Research, pp. 329ff.

outside consultants so as to assure the men as well as their union that the study is impartial. To skim on wages and to lose more through discontent and argumentation are certainly not conducive to profitability.

Use of Savings for Profit Sharing

There are many companies in the country by now who operate very successfully under the principle that the employer should "pay to all employees, in addition to good rates of regular pay, special current or deferred sums, based not only upon individual or group performance, but on the prosperity of the business as a whole."⁵ These plants have found that by treating their employees as partners in the enterprise they have achieved a spirit of teamwork and cooperation that has enabled them to produce higher quality products at lower costs. The National Industrial Conference Board has this to say about profit sharing: "Profit sharing seems to offer the best opportunity to increased teamwork and greater efficiency in the smaller and medium-sized organization where the individual sees more clearly the connection between his own efforts and the profitableness of the enterprise."⁶

Profit sharing is a philosophy of management that may prove to be the most effective method of continuing to sell free enterprise and checking the present spread of collectivism and dependence on government. It is another movement toward recognizing the human dignity of work and of the worker.

Use of Savings as Funds for Future Needs

Any discussion of using savings and profits would be incomplete if it neglected to mention their most obvious use, the building up of *funds or reserves for future needs*. All business has a responsibility toward itself and toward society to cover itself against future risks. This is one of the considerations which should influence the whole concept of profit. The retention of revenue in the form of a reserve is so necessary for the sustained life of the business that it should be considered as part of the cost of doing business.

All manufacturing enterprise under a free economy undergoes risks. Not the least are the unpredictable marketability of its product and the uncertainty that a product under development will sell. There, too, is the risk of obsolescence of equipment, and since the art of manufacturing is a constantly changing one, any dynamic improvement in one segment of the industry may force others to scrap their equipment, buy new machines, or be squeezed out of the market.

For the manufacturer to leave himself unprotected against such risks

⁵ *Profit Sharing Manual*. Council of Profit Sharing Industries, 1948, p. 3.

⁶ National Industrial Conference Board, *Profit Sharing for Workers*. Studies in Personnel Policy, No. 97. New York, 1947. p. 44.

would be folly. However, as small as a plant or enterprise may be, and as crucially as funds for future risks and protection may be needed, the tax collectors scrutinize every fund and every reserve in each year and try to divert at least some of it to taxable income. To pay the taxes but to build up reserves in spite of such interference should nevertheless be a main objective of good management.

Benefit the Community

Industry has an interest in *aiding the health and welfare agencies of the community* from which it draws its employees. Many of these agencies, formerly supported by philanthropists, must now depend for their principal source of revenue on industry. If industry fails them, the state takes over, for the sick and needy must not be ignored. History has shown us that socialized welfare is the forerunner of socialized industry.

It is one of the unwritten laws of human behavior that we take care of the health and happiness of those who serve us. This is not only in accordance with charity; it is common sense. A plant is made up of individuals, and it takes from them a certain personality and character. Help, therefore, to the welfare agencies in the community is a concomitant of efficient and profitable industrial operation.

Benefit the Consumer

Savings, last but not least, may be passed along to the consumer in various forms. The consumer is insatiable in his desire for a "better buy," and the manufacturer who does not satisfy this appetite will not progress. Producers have been and must be ever more alert for ways of making more and better goods for more people. This philosophy of management has a cumulative beneficial effect over a period of years. Whether the savings are placed into sales research, product research, fair wages, profit-sharing plans, funds for future needs, community help, or better machines, all these measures are bound to bring about not only best profitability but also through it better buys for the consumers, better progress for the plant, and better living for the employees.

CONCLUSIONS ON SAVINGS AND PROFIT THROUGH KNOW-HOW MANAGEMENT

Savings and profits are, no doubt, important objectives to be pursued by a manager. As shown, however, the most important consideration must be given to their best use, so that a truly best plant and best working conditions are created.

Savings and profits cannot be achieved by themselves; they must be obtained by best management thinking and action. Some specific efforts that can be set into motion have been discussed in this chapter.

There are, however, many more opportunities to create profitability for the small plant, and while their bearing and influence on savings and profits may not always be direct, a review of all the chapters of this group of the study will readily reveal how all aspects of management that have been discussed are interlocked, supporting or deterring each other.

Fulfillment of legal requirements is not only the basis of civilization and respectable human relations; it also is good business to keep out of trouble and a safeguard for management profits and employees' savings.

Obtaining best workers and the establishment of best labor relations are not only good management in its truest sense but also the most basic prerequisite for all and any kind of work to be done, action to be taken, and profits to be obtained.

Trying to get along with the union means trying to get along with the strongest supporter or troublemaker any plant manager may have. Unions obviously insist on an increasing share of the profits for organized labor, but they can reduce profits even more than any other carelessness in management.

Getting best facilities and material does cost perhaps more than parsimonious management may care to consider. But those who have been willing so far to manage their buying carefully are by now quite ahead of the others not only in their much lower costs but also in their profits.

To achieve best productivity not by human efforts alone but by marshaling also truly best machines, production methods, and most careful management of details is truly good know-how management and another approach to savings and profits.

Doing technical research and doing it right is the basis for more than two-thirds of all the small plants. It is the root from which have been developed most of the products of our times, the superiority of technological civilization, and quite a few of the profits that have transformed small plants into great companies.

Getting best sales is the prerequisite without which no small plant can survive and no large plant can grow into a bigger plant. If there are no sales, there is no work, no employment, no wages for the workingmen, and no profits for the management.

Accounting is the tool needed to determine values, costs, savings, and profits. It does not create them, but know-how accounting can well contribute to make a management think and thus to plan, organize, and operate so that the small plant is safe, its people secure, and its progress more sure.

Saving in taxes is fair self-preservation, especially for the small plant. One should give to the government what is the government's. Most small plants have given so far, and most will pay taxes in the future. Good practical management, however, will not overlook those chances to save in taxes which the law permits and thus use another opportunity for making savings.

Know-how management, as has been shown in all these chapters, is practical management. It aims to benefit management as well as the men, the community, and thus the economy at large. It is not based on finespun theory; it is based on realities and most careful thinking. It has existed, it exists, and it will exist in the minds of men and in their plants, no matter how small or large these plants may be now or may grow in the future.

PART FOUR

SMALL PLANT FUTURE

*This part aims
to appraise the outlook
for small plants
at home and abroad*

"The United States is preeminent among the nations in the development of industrial and scientific techniques. The material resources which we can afford to use for the assistance of other peoples are limited. But our imponderable resources in technical knowledge are constantly growing and are inexhaustible.

I believe we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life. And, in cooperation with other nations, we should foster capital investment in areas needing development.

Our aim should be to help the free peoples of the world, through their own efforts, to produce more food, more clothing, more materials for housing, and more mechanical power to lighten their burdens."

HARRY S. TRUMAN,

Inaugural Address to Congress, Jan. 21, 1949.

CHAPTER 19

THE GENERAL OUTLOOK FOR SMALL PLANTS IN THE UNITED STATES

BY

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The immense diversity of the field of "small plants" gives it a twofold significance. (1) Its activities as the "seedbed of industry" have contributed enormously to the past development of this country, in which nearly every enterprise of consequence today was once a "small business." (2) This widely scattered group of small enterprises is now much more largely dependent than before on economic trends beyond its control. The integration of business that has proceeded, through the course of a century or more, has certainly left the estimated 10,000-odd large plants of the country more secure than most of the 280,000-odd small plants.

The large companies tend to shape the economy of their industry more than the smaller ones. Size, commercial momentum, and sheer weight of capital frequently overweigh the efforts and originality of the small plant management—though, one is glad to note, with striking exceptions to the rule. As a generality, however, the technological character of an industry is determined largely by its biggest components. They would not long remain the biggest were they technologically deficient.

Almost every industry has its quota of small plants, thus affected by the "leaders." Some industries are characteristically small plant, with no dominating leader. These tend to be more fluid.

In addition to all these characteristics of manufacturing plants which elude generalization, there must be considered the legion of "service" shops which perform one or more operations. They are independent in a technical sense, but actually they service the products of larger manufacturers.

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All these diverse facts should make it difficult to forecast the outlook for all these enterprises combined, but one can nevertheless attempt some predictions, because small plants have quite a few things in common in addition to their smallness.

Small plants, viewed individually or as a group, are enterprises that are managed mostly by their owners. Their administration is different from the kind of management which has been evolved by the executives who manage the larger establishments. Small plant management is and must be relatively more direct, practical, and effective to survive. The small size of the enterprise limits the manager in his resources but compensates by giving him the opportunity to manage without a cumbersome administrative apparatus and other handicaps of large plant managements.

Considering this, one can say that the outlook for small plants is relatively as bright today as it always was, possibly brighter. Small plants have survived the technical and economic changes in the past and as a class will survive them in the future. Small plant survival and progress have never been brought about mainly by economic conditions, but rather by the determination and character of management which the small plant managers were able to muster.

There is some proof of this in the apparent relative stability in the number of small plants which during the current century seem to recover after depressions and wars to a figure within 5 or 10 per cent of a constant group of small plants numbering about 250,000 establishments.

HOW HAVE SMALL PLANTS FARED IN THE PAST?

Looking back, one perceives that tens of thousands of small plants have made their contribution to the industrial growth of our country, and a great many of them have made peculiar and indispensable technological contributions rivaling those of the big firms.

One perceives also that the so-called "job shop" or manufacturers' service firm has been the beginning of a great many little industrial empires and some big ones. This refers to such operations as those of the sand blaster, the heat-treater and grinder, the welder, the laminator, the plater, the enameler, and the foundryman. The blacksmith starts to make carriages, the carriage maker ventures into automobiles—and an industry is born. This process of evolution of the individual enterprise is constantly going on and is one of the most hopeful aspects of our industrial economy.

The bare statistics, fluctuating above and below 250,000 for reported plants and an unknown number (undoubtedly tens of thousands) of "job shops" unreported, do not reveal the innate vitality, the strength or weak-

ness of various lines, or firms within those lines. This can be determined only by personal contact and clear analysis of the instant conditions. The broad past history and immediate outlook, nevertheless, justify the prediction that a firm and secure place in the economy for the small plant remains.

The older generations of small plant owners had to overcome mainly technical troubles. They had to develop materials, invent processes, build their own machines and equipment, conceive and improve their products, and try to get them bought by the traders who did the selling. All this and more they had to do with limited knowledge, limited resources, without technological sciences, without laboratories, and with very little money. Yet this first small plant group developed more technological contributions than can be enumerated in figures. They developed "technical know-how" long before the phrase was invented.

The later generations of small plant owners faced mostly commercial troubles: cutthroat competition; discrimination in prices, in discounts, and in material supplies; disadvantages in getting representatives and dealers; difficulties in obtaining loans, credit, and capital. The antitrust laws, the Sherman Act, and many other pieces of legislation bear witness to turbulent and at times grim periods in the history of small firms. Yet small plants as a group developed manufacturing and commercial procedures which were even more effective than the protective laws, and the good plants survived. But the prospect of survival depends more than ever on hard work and good "know-how in management," recognizing the new importance of these factors.

HOW WELL WILL SMALL PLANTS FARE IN THE FUTURE?

There is good reason to believe that small plants will fare as well as the big ones, group for group and gross volume for gross volume, and possibly better. To small business have always been attributed the advantages of mobility and flexibility in changing circumstances. Adaptability is its biggest asset. When to this is added the personal interest and attention of the proprietor (who works with no minimum wages or maximum hours), then to the extent of its capital and market, the small business frequently has an unbeatable advantage over its big competitor.

The small plant manager can meet his tax problem in part by plowing resources back into research, top-notch maintenance, and sales efforts. Small plants are frequently freer of dividend demands than large ones.

Government laws and regulations of the United States are still quite bearable compared with those of other countries. They may make the small plant proprietor work more hours, filling out forms and "minding his p's

and q's," but his problem, by the very reason of his small size, can often be kept more manageable than that of the big firm.

Labor laws, union recognition, regulations on working hours and conditions, and other employee relations can often be handled much more easily and better in the small plants than in the big ones. Again, know-how applied in time and with discretion can outdo many experts, arbitrators, mediators, agents, lawyers, psychologists, and miscellaneous categories which encrust big management. The small entrepreneur can be all of these.

Tax laws and regulations represent possibly the most burdensome problem. They are frequently the most resented of all government burdens as far as the small plant producers are concerned. Funds saved up for improvements may have to go for taxes; profits which appeared as a well-merited reward for the year's efforts melt under the glare of the tax offices.

Costs in materials, wages, services, and anything else which the small plant has had to buy and pay for have been one of the most worrisome problems of the small plant manager. But costs have come down before and will come down again. It seems safe to say that, in practically all industries and trades, the small buyers will again be given consideration, courtesy, and price concessions.

High operating costs in small plants are not usually attributable to the smallness of the plant but can generally be traced to inadequate management. High cost of labor can often be ameliorated by better operating; high cost of material requires technical or commercial research; high overhead can be reduced by better supervision and close attention to those items which make up the "high" costs.

Problems of Capital and Credit: In times of retrenchment, when orders are given reluctantly and are held back in hope of lower prices, distribution outlets tend to seek more trade credit. Then the financial resources of the small plant may become seriously strained. These conditions are bound to arise frequently with small plants if adverse economic factors develop. Difficulties due to lack of capital and lack of credit are then added to the operating problems. When this outlook begins to appear on the horizon, the small plant manager should work as closely as possible with his banker and where possible with his suppliers. The larger suppliers are always interested in maintaining their accounts and frequently can open a line of credit to assist their sources, which the source itself in some cases cannot obtain. Circumstances of this kind really test the ingenuity, standing, and foresight of the small plant manager.

The new enterprise, the recently established small plant in particular, needs that cautious preventive financial thinking even more than the older small plant, because it is not known so well, not trusted so much, and not able to

rely on personal relations so effectively as the small plant that has been part of its environment for years.

Volatility of Markets: Consumer preferences shift more rapidly nowadays than before. Immense advertising appropriations, at the command of the big companies, alter and direct the public taste more rapidly than in former days, when product good will was more slowly developed and more securely held. In addition, many large companies are venturing into new fields and offering competition in segments of the economy which never heard of them before. Both of these factors represent hazards to the small plant novel in comparison with those of the half-century ending in the 1930's.

Competition: This is the central characteristic of the free-enterprise system and its greatest toll taker. It is in the market that enterprise competes with enterprise. Aggressive development of distributive outlets, lower costs on a unit basis, and greater advertising effort are among the most conspicuous activities of the larger plant, which the smaller plant must meet. But when all is said and done, even the most powerful companies must send men out to *convince buyers*, and this the small plant can do in its territory as well as the largest plant.

The small plant may not have the impressive personnel or the expense allowances for doing a sales job as well as its large rivals. Many small plants cannot give the same guarantees as to service, repairs, credits, advertising, engineering help, and research as can the big firms. But the small plant can and must hold its customers by the quality of its products, prompt delivery, and low price. There are few other ways of getting customers for the small plant in the long run.

Sales counsel, affiliation with distributing firms, and possibly joint selling arranged by a few small plants may save some situations, but success will be uncertain unless these arrangements are well set up, backed by the most intense efforts of all who participate and by sufficient capital to offer the products in a manner and at a price that will meet the competition. This has been done before and can be done again.

WHAT SMALL PLANTS WILL NEED MOST IN THE FUTURE

If one sums up the difficulties considered so far as A. D. H. Kaplan did in his study on *Small Business: Its Place and Problems*,² he is bound to agree that what small plants need most in the years to come are

² A. D. H. Kaplan, *Small Business: Its Place and Problems*. New York, McGraw-Hill Book Company, Inc., 1948.

First and foremost: Improved management

Second: Availability and intelligent granting of credit and capital

Third: A more favorable program of taxation applied by all tax-levying authorities.

The fulfillment of the first need is entirely up to the individual small plant manager. He is the only one to bring about the changes and improvements which will give to his plant that better management. This entire book and many other sources mentioned herein are at his disposal. As busy as a man may be, it will pay to read and to study. Such counsel will add to his knowledge.

Fulfillment of the second need, the intelligent granting of credit and capital, depends not only on the manager but more on bankers and others, such as trade sources, who have funds to lend or credit to grant. There may be a dearth of equity capital, but there is no indicated shortage of funds to be lent to worthy small plants. What is lacking most is a sufficient number of truly qualified credit takers who can be considered as good risks. It always is worth while and good insurance for the future to take the steps to become "accepted" by a bank as trade borrower.

Fortunately, the bankers of our times are not interested in big business schemes alone. As keen observers of their particular environments and communities and with ample funds, they now consider the small customer as desirable as the large company. In fact, banking seems to be at the threshold of an era in which the small plant will have not only consideration but a favorite spot in credit policies, together with counseling and other help that bankers can give. And there are additional sources of credit which anyone may turn to before it is too late.

Fulfillment of a more favorable program of taxation is possibly the goal most difficult of achievement in the future. Taxation is a difficult subject under almost any circumstances and even more difficult to set right within any economy once it has become warped. There is little the small plant manager can do as an individual to bring about lower taxes. But he can exercise his civic rights and make himself heard by joining groups which have the knowledge and the means to bring progress toward this end.

In summing up this general part of the outlook, it would be well to state that it was given over primarily to the discussion of those difficulties which can be expected to prevail in the future. Difficulties they are, but they are neither insurmountable nor overwhelming. The small plants, seen as a group, are not worse off than others. They possibly will fare better than average.

In order to present a closer view of the outlook for small plants, the conditions are discussed below that prevail in the four major sections of this country: West, East, South, and North.

Among the significant sources for these appraisals are the very exacting reports of the postwar Credit Policy Commission of the American Bankers Association, as well as the customary territorial indexes appearing in the *Statistical Abstract of the United States*, and general current information and personal observation.

OUTLOOK FOR SMALL PLANTS BY REGIONS

Opportunities for Small Plants in the West

The Far West represents the Pacific coast states, comprising the Twelfth Federal Reserve District.

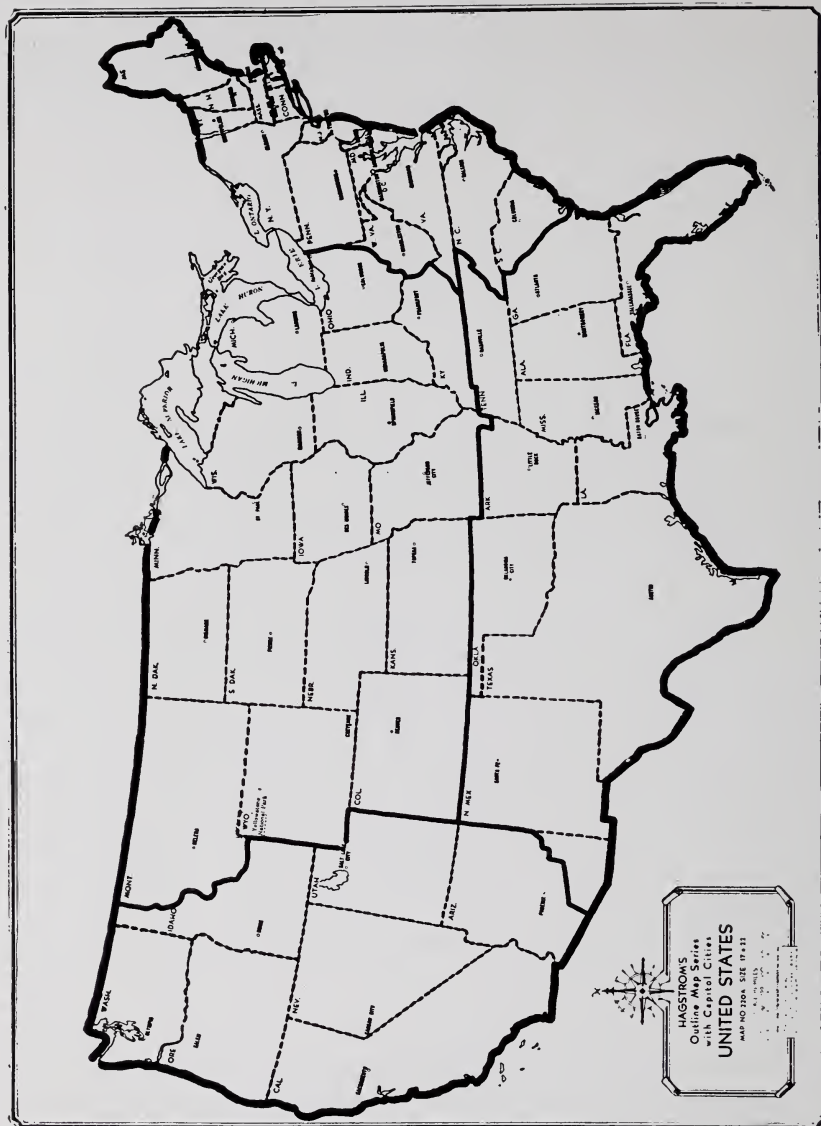
This district has grown considerably in population during the war and postwar period. California grew from under 7 million to over 10 million people, and the other states proportionately, so that the increase in the district as a whole is from 11 million to over 16 million people, or about 45 per cent. By way of contrast, the growth for the entire nation was about 11 per cent.

This expansion of population has brought with it some striking changes in the economic structure of the area. Previously, the section had been predominantly a raw-material producer and processor. It had bought heavily from other sections of the country and paid for those purchases by sending out into the markets the products of its important forest, mineral, agricultural, and fisheries resources. Now it is becoming more of a manufacturer. The Western lumber industry supplies approximately two-fifths of the total United States output; an important share of the nation's copper is produced here; the three coast states account for nearly three-fifths of the canned-fruit pack, over one-third of the vegetable pack, and about one-half of the output of canned fishery products. In petroleum production, the area represents about one-sixth of the United States domestic output.

There is another important aspect of business characteristically small: The five states included in available figures have less than 5 per cent of the total number of farms and less than 5 per cent of the total farm population of the United States, yet they accounted for over 11 per cent of the total national receipts from cash farm marketing.

Before the war, Western manufacturing in general was on the basis of relatively small-scale operation. There were exceptions, such as in mining and smelting, paper, sugar, and oil refining, but the vast majority of Western industrial plants were small by Eastern standards. Today, larger plants are becoming more common. There is a definite tendency toward larger units and organizations, but many remain still in the small plant group.

THE GENERAL OUTLOOK FOR SMALL PLANTS IN THE UNITED STATES



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The gradual processes of industrial evolution have been proceeding for many years back. The expanding local market has made possible the economical production within the area of many manufactured products for which the region formerly depended principally on outside sources of supply. Many concerns producing for the national market have established branch manufacturing plants in the Western states. All this gives new opportunities to other small plants.

It is not yet a mature industrial economy by any means, but apparently it is moving in that direction.

From one standpoint, the northern and southern portions of the Far West are to be sharply distinguished—as to potential power and water supply. In the northern portion, these are redundant; in the southern portion, deficient. It has been estimated, for example, that water is being withdrawn from the land under Arizona at a rate five times as fast as the natural inflow. Present and future industries of the Far West must take careful note of this condition so that they may settle where best suited conditions prevail.

The population growth has resulted in serious housing shortages. That, in turn, has stimulated lumber, cement, and other building-supply industries to high rates of output and given business to small plants. More can be expected. In spite of the postwar loss of 650,000 jobs in shipbuilding and aircraft alone, employment *totals* have actually gone up in the district, not down.

While there are about 600,000 fewer people in industrial employment in the five states, the reduction has been offset by increases of some 250,000 in trade, 170,000 in services and finance, about 80,000 in transportation and public utilities, and about 70,000 in construction. A considerable proportion of this recovered employment must be in small enterprise.

Lumber is, of course, the most important single factor in the economy of the Pacific Northwest and, to a lesser extent, in California. The mortality rate among the innumerable small mills is almost inevitably going to rise. Since about 40 per cent of Western lumber production has recently come from that source, there is going to be some contraction in over-all lumber production of the section. But the larger, better financed, better equipped lumber concerns—still actually in the small plant class—do not report particular alarm about it.

In 11 years, loans of the Twelfth District member banks went up from \$1,967,000,000 to \$5,592,000,000; deposits went up from \$4,892,000,000 to \$16,011,000,000; capital went from \$452,000,000 to \$890,000,000. Considering the population increase of 44 per cent plus and the resulting potential improvement in all lines of trade, these figures apparently show a solid basis available for the future.

Opportunities for Small Plants in the East

The peak of the postwar boom appears to be over, and business generally is likely to recede unless given a new impetus by some new stimulus. Production has caught up with consumption in most lines, and it is certain that highly competitive conditions are returning, that soft spots are developing here and there, and that business failures are on the increase. Many war plants have been closed, some banks in the area are having losses and slow loan situations, and all are really getting back to what may be called normal old-time banking.

However, business in the East is expected to be good in the aggregate for quite some time. An acute depression is hardly in sight, because there is still an unsatisfied demand for capital goods in this country and abroad. Many plants in the eastern area produce for export, which simply will have to be worked for in spite of devaluations. Farmers and factory employees still have considerable expendable funds, and employment is reported running relatively high in this section despite sporadic layoffs.

In most of the textile industry supply has caught up with demand, a situation which has been reflected at the manufacturing level by reductions of employment and at the retail level by occasional sales. Successfully styled merchandise, however, is much in demand. Some small mills, poorly managed, have already suffered. Not many new ones will be established in this district.

The apparel industry, early established in this area, has a somewhat qualified outlook. There has been a definite softening in demand in the wearing-apparel field, particularly in men's suitings and shirts. Suit prices have come down, and more price cutting can be expected in the future. The current oversupply of men's white shirts (made by quite a few plants) again proves the point that industry, in endeavoring to eliminate a shortage, often increases production to the point where supply not only catches up with demand but far exceeds it. New plants will have to be prepared to meet stiffest competition from established, hard-fighting competitors.

The shoe industry in the East during the past year has had a rather difficult time, although the very big companies have been doing fairly well. The shoe-industry capacity nationally is around 600 million pairs, and the annual consumption around 450 million pairs, so that marginal producers are bound to be under pressure. Unsettled conditions in the women's field have been augmented by the shift in demand. About 70 per cent of the demand is now for less expensive casual and sport-type shoes, where in prewar times women's dress shoes normally represented about 70 per cent of production. Shoe manufacturers, both men's and women's, are in a

squeeze between rising costs and consumer resistance to high prices, and only the most efficient can operate profitably.

General manufacturing of the many items for which the East, and particularly New England, is famous is flourishing, although not without certain problems. The short supply of steel has been troublesome from time to time. Chain stores and mail-order houses have ordered out goods manufactured specifically for them on a slower schedule than originally contemplated and seek lower prices. With adjustments, however, there is a fairly good long-trend outlook for most small plants. The weak ones will go, as always.

Radios are "heavy," and a buyers' market exists throughout the industry, with the possible exception of television. Certain brands of television sets are being marked down, and radical changes in television are anticipated. This field should certainly not be entered by new small plants except with the greatest care, however luminous its total prospects are.

During the past decade, "term loans" have in general been quite popular with many of the Eastern banks, and large as well as small plants have negotiated them. Now the banks are veering away from these term-loan commitments, particularly those running 5 to 10 years. However, some banks, when requested, still feel that they owe an obligation to their customers of long standing and of high credit ratings to take care of them on a term basis, although many banks have discontinued completely making term loans. Of the limited amount of such term loans that may be made under present arrangements by banks in the East, few would run longer than 3 years. There is a tendency for banks that have been active in the term-loan field to restore emphasis on regular-type commercial bank loans.

Banks are again paying more attention to many of the time-honored and proved practices of credit extension, which fell into temporary disuse during the period of war production. Such practices would include an insistence upon periodic checkups, an insistence upon more frequent and more complete reports and audits, and a greater emphasis upon adherence to orthodox balance-sheet ratios. Banks will show more determination in the future to insist on sounder credit requirements, even though they may lose some business. Banks are keenly aware that an unsound extension of credit under present conditions is not in the interest of the economy in general, in the interest of the banks, or even in the interest of the customers, and bankers are inclined to feel that time will make present credit mistakes worse rather than better. When equity capital is clearly essential in a customer's business, banks will be more insistent than ever that it be put in.

Small plant owners, however, may take some comfort in the fact that bankers are making every effort not only to know their customers' businesses thoroughly but also to know all they can about the industries in

which their customers are operating. As one New York banker said, "While diversification of risk industrially seems desirable for all banks, selectivity of risk within the industry is an absolute postulate. The balance-sheet excellence of a war-made concern can change overnight as its product falls competitively under the scrutiny of the American housewife. The banker must analyze management as always, but nowadays markets as well."

The following verbatim quotation from Mr. Hageman's report³ may further encourage the small plant owner somewhat:

We are all aware of the increasing emphasis which banks have placed in recent years on public relations, and 1949 will see a continuation of this policy. Bankers will be emphasizing a constructive and helpful approach to their customers' loan problems. If the lending officer cannot see his way clear to make the loan, he should do his utmost to suggest a positive course of action to the would-be borrower and avoid a flat turndown. Perhaps with sufficient thought the proposition could be made bankable, or perhaps the applicant could be directed to some other bank or financing agency which could accommodate him. In any event he should be made to feel that his request has received careful and thoughtful consideration. As you know, one of the most frequent reasons why a loan cannot be made arises from the fact that the applicant really needs venture capital or equity financing and not bank credit. A careful explanation by the loaning officer of the nature of bank credit as differentiated from equity capital can perhaps do much to preserve the good will of the particular bank as well as of banks in general.

Opportunities for Small Plants in the South

During the war years, the Southwest in common with the Southeastern part of the country experienced a truly phenomenal economic growth. Stimulated by military and related activities, by rapid acceleration of industrialization on a substantial scale, and by an unusually large—in fact, almost insatiable—demand for the production of its land and of its principal mineral resources, business indexes reflecting volume and value of activity showed much-greater-than-national average increases.

Nonagricultural employment, new construction activity and construction contract awards, production of petroleum and related products, department-store sales, income payments, and bank debits are among the principal measures showing clearly the greater relative expansion which occurred throughout the Southwest. In addition, war facilities costing more than \$1.4 billion were located in the area, not only providing additional important sources of income, production, and employment but also creating in the region new or expanded industries. This has been especially so in the fields of chemicals, synthetics, and petroleum and related products, all of which

³ H. Frederick Hageman, National Credit Conference of the American Bankers Association, *Proceedings*, December, 1948.

have become and will remain important factors in the area's postwar development.

In agriculture, which continues to be one of the principal elements in the economic strength of the entire South, intensive cultivation and favorable growing conditions resulted in unusually large and profitable crops. Cash receipts of farmers in the Southwest rose by the end of the war to more than 265 per cent of the prewar level, while farmers in the Sixth Federal Reserve District (the Southeast) enjoyed an even greater increase.

Since the end of the war, virtually all lines of business and industrial activity have continued to advance in the Southwest but at a smaller rate of increase than was characteristic of the war period. Large-volume agricultural production continues to be a characteristic of the whole South.

During the early months of the period, business and industry used accumulated cash resources to support their reconversion and expansion programs, but by the latter part of 1946 such organizations began to turn in increasing numbers to commercial banks.

As inflation spiraled upward in this area, the cost of doing business, including carrying inventories and accounts receivable and meeting payrolls and other expenses, also went up and increased the demand for borrowed working capital. As consumer durable goods became available in larger supply and, like other merchandise, at a higher unit cost, the demand by individuals and finance companies for credit gained notably. The banks will watch this situation.

The serious housing shortage in the area induced a record level of residential construction and contributed to a substantial increase in many demands. Substantial increases in wages of farm labor in the area, the higher prices for farm products, and the general rise in other farm income are all reflected in a steady and continuing demand for more products and services throughout the South. These conditions offer new opportunities for small plants.

Other indications for the future can be obtained from the facts that in 1947 production of cotton and cottonseed in the states in the Eleventh and Sixth Federal Reserve Districts was valued well in excess of \$1.5 billion, while livestock production was valued at substantially more than \$2 billion. In addition, large production of tobacco in the Southeast; wheat, rice, and other grains in the Southwest; citrus fruits in both areas; and many other farm products added many millions of dollars to the income of the areas. All activities, transportation, and commerce incidental to the production of such large crops and associated with their movement from farms and ranches to markets obviously are very substantial. In due time, lower agricultural prices, however, may in some cases invite new small industry to take advantage of processing opportunities which will develop in this area.

Opportunities for Small Plants in the North-Central Area

After 8 years of war work, excellent crops and good prices in this territory, bank deposits have increased heavily, and enterprises are well fortified. On June 30, 1948, for example, the loans of member banks in the Ninth Federal Reserve District (Minnesota and the Dakotas) were less than 25 per cent of deposits, which indicates a generally sound position in the area and is also a reflection of conservatism on the part of both banks and borrowers. There is no doubt that this part of the country offers adequate capital and diversity of opportunities.

The vast North-Central area of the country is undoubtedly the best established example in the nation of diversified farming combined with diversified manufacturing. Practically anything raised or made anywhere is raised or made somewhere in this area (with the possible exception of cotton). Electrical equipment; coin machines; gimmicks and gadgets galore; heavy manufacturing; the multifarious activities of job shops; the whole cycle of such major wonders as glass, plastic, and rubber; "the farm chemurgic"; practically the entire agricultural-equipment industry and most of the automobile industry; meat packing; immense segments of the steel and petroleum industries; and important components of the mining industry, all lie between the Alleghenies and the Rockies and north of the Ohio. And amidst this immense processing activity exists the cream of the country's farm areas. The Middle West is almost the torso of a pulsating economy—not wholly self-contained, but mighty and indispensable to the rest of the country as is almost no other section. It is probably the richest and most diverse area of the whole United States from the standpoint of small plants.

The diversity of common opportunities which the North-Central area offers does mean at least a wider variety of opportunities for small plants, if not perhaps such an opportunity for dynamic expansion as may be afforded by the Northwest and the near Southwest. Banks in the area generally are experienced in all phases of business, inclined to use a variety of lending techniques, cordial to newcomers, and perhaps somewhat more likely than elsewhere to take a practical attitude toward clients' problems, with less emphasis on theoretical balance-sheet ratios.

SUMMATION ON THE FAVORABLE OUTLOOK
FOR SMALL PLANTS

On the whole, it seems likely that in the future the near Southwest and far Northwest sections of the country will show the greatest proportionate gains in industrial activity and power consumption under favorable con-

ditions, while under unfavorable conditions, the greatest resiliency and resistance seem likely to be displayed by Texas and the Middle West. The very diversity of all areas makes generalization difficult and particularization almost impossible as to where the future outlook will be best for small plants.

Just in which industry there will be the "greatest opportunities" for small plants can hardly be guessed. There is no one or a few predominant industries like textiles and machine tools in the East, chemicals and petroleum in the near Southwest, or others by which to judge the prospect as a whole.

One hears in different quarters that "business is good" or "competition is keener" or "prices will go lower" or "collections are slower," but in no case is it easy to generalize on the future of some particular area or industry. Almost every one holds some promise for expansion. The swirl of price changes, consumer preferences, shifting payrolls, labor troubles, and whatnot are as likely to strike one line as another or one company as another in the same line.

But it is certain that small plant managers in the future as in the past will find the area and the industry where their small plants can prosper.

CHAPTER 20

SMALL PLANT OPPORTUNITIES IN LATIN AMERICA AND OTHER COUNTRIES

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INDUSTRIALIZATION SO FAR ACHIEVED

The beginnings of industrialization came relatively late to Latin America, as compared with those areas of the world which we now consider heavily industrialized, and this handicap is reflected, at least in part, in the stage of industrial development attained by the area as a whole today. Since the founding of the first manufacturing enterprises in South America during the last quarter of the nineteenth century, Latin Americans have achieved notable advances industrially, particularly in the larger countries and under the impetus provided by World War I and World War II, but it is clear that even the most progressive of the other American republics in this respect are only beginning to arrive among the truly industrialized nations of the world. The heavy industry, so vital as a foundation for a well-rounded industrial economy, is lacking or inadequate in virtually all countries, although efforts are being made by the larger countries, notably Argentina, Brazil, Chile, and Mexico, to meet their deficiencies in this regard. The absence of well-developed basic and of small plant industries has perhaps prevented the growth of large-scale, specialized manufacturing which might permit Latin-American manufacturers to compete readily in world markets.

The recent and future development of basic industries, however, is bound to provide opportunities for the development of small plant industries whose raw materials are the products of the basic industries. Steel mills produce coke-oven by-products for the chemical industries to develop. Rolling mills produce billets and bar stock for the machine shops to process, sheet metal for refrigerator and deep-freeze-unit bodies and numerous household ap-

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pliances, lawn and office furniture and equipment; pipe and tube mills provide materials for bicycles, baby carriages, and a multitude of pipe and tubular products. Without the production of such items there would be little outlet for the steel-mill products. Likewise, electric-power developments create plant opportunities for forestry, agricultural, fisheries and other basic product utilization, chemical industries, and others.

The lateness of the industrial awakening of Latin America, as well as the limitations which have characterized its subsequent industrial progress, may be attributed to a variety of factors, among them ethnological, topographical, and climatic impediments; limited markets; and the absence or inaccessibility of certain important raw materials and fuels. Under the influence of these and other factors industrialization has proceeded along three principal lines: the *processing of raw materials for export*; the *providing of services for immediate use*, such as power plants, foundries, and construction enterprises; and the *production of consumer goods* for domestic consumption.^{1a} Under the influence of these same factors Latin-American industrial undertakings have remained small in size, the average number of employees per plant in Argentina and Brazil, two of the most advanced countries industrially, being estimated at 16.0 and 16.2, respectively, as compared with an average of 42.7 persons per plant in the United States.²

POINTS FAVORING SMALL PLANT ESTABLISHMENT

It would appear from the foregoing brief statement of the nature and extent of industrial development in Latin America at the present time that small-scale industrial undertakings constitute an important factor in the economies of the other American republics, and although branches and subsidiaries of large, well-established American companies have hitherto taken the lead in the migration of American industry to Latin America, it seems reasonable to conclude that *the economic environment may also be favorable to the migration of the American small plant operator*. This conclusion is borne out by the experience of European emigrants, many of whom have been extraordinarily successful in combining meager capital resources with the technical skills acquired in their native lands. The efforts of Germans and Italians, for example, have contributed substantially to the development of Argentine industry, and at the present time European

^{1a} George Wythe, *Industry in Latin America*. New York, Columbia University Press, 1945, p. 13.

² Lloyd J. Hughlett (ed.), *Industrialization of Latin America*. New York, McGraw-Hill Book Company, Inc., 1946, p. 48.

refugees entering Argentina are being encouraged in the founding of small-scale enterprises in a wide variety of industrial fields. The Argentine government has authorized the transfer of some 37 Italian plants with their 8,000 workers from Italy to Argentina, and more are being encouraged. European influence of this kind has also been strong in Brazil. In this connection, however, one important fact should be kept in mind: even in normal times Europeans came to Latin America prepared to spend their active years or possibly the remainder of their lives there; Americans are rarely so disposed, and their general reluctance on this score is in some measure an obstacle to the success of such a venture.

Granting that there is a place for the small plant in the Latin-American scene, *in which lines of industry do the prospects of success appear brightest?* One of the fundamental problems of most Latin-American countries in the postwar period has been to find a remedy for the persistent imbalance in their international accounts, brought about for the most part not by a decline in the level of exports but rather by the necessity of satisfying an enormous demand for imported merchandise. Since the possibilities of raising the present high level of exports are on the whole slight, the solution to the problem would seem to lie in *increasing domestic production in order to reduce the necessity for imports*. The realization of the need for greater domestic production of goods which must now be imported is the basis for much of the pressure for expanded United States investments in the area. This being the case, it follows that the goods produced by the small plant which will find the *widest acceptance* will be those based entirely or largely on the *use of domestic raw materials* and, second, those which, though based on the use of imported materials, are *essential to the economy of the country* concerned, experience a *substantial increase in value* through manufacture, and thus result in a *reduction in terms of foreign exchange* of the cost of making the goods and services available.

When consideration is given to the nature of Latin-American tariff and trade-control policies, further support is found for this conclusion. Many *Latin-American tariffs* have long had a strong protectionist tendency in favor of articles produced or suitable for production domestically. Import and exchange controls may be expected to be administered in such a way as to prevent or limit the use of imported raw materials in the production of nonessential manufactures and at the same time, with the aid of high import duties, protect nonessential manufactures produced from domestic raw materials. If essential manufactures are to be produced from imported raw materials, import and exchange controls tend to cut down imports of competing imported manufactures to the extent that the domestic product is able to supply the market and to facilitate the importation of the raw materials needed in the production of the domestic product.

OUTLOOK FOR SMALL PLANTS IN LATIN AMERICA



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POTENTIAL DIFFICULTIES TO BE CONSIDERED

The practicability of small plant operation in any given situation will, of course, depend upon many technical factors which are beyond the scope of this chapter. However, the establishment of any business enterprise abroad, whether large or small, requires the consideration of a number of political, legal, economic, social, cultural, and psychological elements, any one of which may be of critical importance to the success of the undertaking. This is particularly true with respect to the initiation of operations in Latin America. In the succeeding paragraphs an attempt will be made to indicate instances in which these elements may be of special interest to small plant operators.

As noted previously, *balance-of-payments difficulties* have beset most of the other American republics in the present postwar period, with the result that 12 of the 20 countries, including all the major countries except Cuba, Venezuela, and Mexico, now exercise exchange controls, and Mexico operates a system of import controls. In spite of the guarantees as to the withdrawal of capital and earnings which many countries exercising exchange controls offer to foreign investors, the controls do, in practice, act as barriers to the free withdrawal of funds from the countries in which they are enforced.

There exists the strong possibility, therefore, that the *small plant operator establishing himself in one of these countries may be forced to accept residence there for an extended period* as part of the price of doing business, since, unlike the large industrial corporation, presumably he will not be in a position to leave his profits in the country until the return of more favorable exchange conditions. The unattractiveness of such terms to the average American has already been mentioned and will probably persist—despite the prevalence in Latin America of *comparatively low income-tax rates* and quite frequent *profits on investments of as much as 50 per cent*—as long as Latin-American governments and currencies remain unstable and political and economic conditions in the United States continue satisfactory.

The availability of *local labor and technicians* is another important consideration confronting the prospective small plant operator, since most of the other American republics have labor laws which specify that a fixed percentage—more than 75 per cent on the average—of company personnel be nationals of those countries or that a fixed percentage of the company payroll be paid to nationals. Some countries qualify these provisions in the sense that the employment of foreigners in technical positions is permitted only for such period as may be required to train a native to perform the work. At the present time, notwithstanding the notable progress that has

been made in the training of Latin-American labor and technicians by foreign companies and through the training programs to which the United States government has lent its support during the past 10 years, skilled labor and technicians are scarce in Latin America as a whole. It would seem that under these circumstances the ability to operate on a small scale, without necessary reliance on large numbers of trained native personnel, would be somewhat advantageous for the small plant operator.

The threat of *government expropriation* is a political factor which often enters heavily into the calculations of Americans contemplating direct investment in Latin America. Undoubtedly the importance of this factor has dwindled, as government efforts in the direction of nationalization have tended to become centered about the gradual acquisition by purchase of foreign holdings in the *public-utility field*. However, the important thing for the small plant operator to remember is that the nationalization tendency—however it may be given effect—has been directed toward entire industries or large units of industry in which the public interest is substantial; *small enterprise has not generally been affected*.

Closely related to the question of expropriation is the question of the possibility of *competition from government-owned enterprises*. It is true that many Latin-American governments engage in various forms of business activity, but in the main this has been confined to the promotion of steel plants and other basic industries which private capital has not been able to develop, the provision of additional credit facilities to support development programs, and the operation of the traditional revenue-producing monopolies in the distribution of such commodities as tobacco, matches, and salt. Here again the threat to the small plant operator would appear to be more apparent than real.

As has already been pointed out, one of the important barriers to the development of Latin-American industry, and especially large, specialized industry, has been the *smallness of the markets* to be served. Although the 20 Latin-American republics taken as a whole have a population about as large as that of the United States, national boundaries make of each country a separate market consisting of a few million persons. Trade among these countries has assumed importance only during and since World War II. In some countries, of which Brazil is a conspicuous example, *inadequate transportation* brings about division of national markets into separate regional markets. Moreover, markets are limited not only in terms of population but also in purchasing power; it is estimated that the average *per capita income in Latin America as a whole is only about one-fifth as large as per capita income in the United States*.³ The possibility that *small, efficient producers might successfully provide these limited markets with in-*

³ Wythe, *op. cit.*, p. 59.

expensive merchandise seems worth exploring, especially when it is recalled that European and Japanese manufacturers achieved considerable success in this field prior to World War II.

In view of all this, it may fairly be said that *opportunities for small plant operation do exist in Latin America*. The economic environment, calling for increased production, at a relatively immature stage of industrial development, to supply a number of small markets, is favorable on the whole, although unstable monetary systems, when coupled with the existence of considerable political unrest, may constitute an important deterrent to the more conservative. *The political and psychological attitude in Latin America toward foreign enterprises also favors small-scale industrial organization*, since the small plant is less conspicuously foreign than the large establishment and is less likely to provoke the antagonism of those who fear domination by large foreign business interests. These general considerations are by no means controlling, but they do point to possible profitable lines of inquiry for American small plant operators.

GOVERNMENT SERVICES AVAILABLE TO SMALL PLANT MANAGERS ON OPERATIONS IN FOREIGN COUNTRIES

As has been indicated above, *the United States government has contributed substantially* to the training of Latin-American labor and technicians through its sponsorship of training programs, either on its own initiative or in cooperation with American industry, during the past 10 years. *Other programs supported by the United States government* have been designed to improve standards of public health, social welfare, and education in the Latin-American countries; to extend the use of advanced agricultural and scientific techniques; and to promote cultural exchanges. *Presumably technical cooperation* of this type will receive even greater emphasis in Latin America and other underdeveloped areas of the world under the Point IV program of President Truman.

While these developmental programs of the United States government are of general interest to the prospective small plant operator, since the objective of such programs is to strengthen the economies of countries in which he may be interested, there are quite a few *activities of government which provide services directly and immediately connected with his operations or projected operations abroad*. Preeminent among these services are those of an informational and representational character performed by the Foreign Service of the United States, in cooperation with other government departments, on behalf of American business.

The economic and commercial reporting staffs of the Foreign Service establishments maintained by the *Department of State* throughout the world forward to Washington reports on a wide variety of topics within their special fields. The dissemination of much of this information, in published form or otherwise, is the responsibility of the *Office of International Trade of the Department of Commerce*. Thus, at the very outset of his investigation of the possibility of conducting a successful operation abroad, the small plant manager may obtain at nominal cost *Department of Commerce studies of marketing areas* and of the market for his particular products in various countries in which he may be interested, *current reports on general economic conditions* and living and office-operating costs in individual countries, and reports setting forth the factors to be considered and the *legal requirements* to be met by Americans organizing new business establishments in individual foreign countries.

In addition, the *assistance and advice of economic specialist of the Office of International Trade* in regard to individual commodities or countries, tariff and trade-control regulations, foreign-exchange restrictions, transportation and communication facilities, and a great many other subjects are readily available at all times by mail, telephone, or personal interview or indirectly through inquiry at the *field offices of the Department of Commerce* throughout the United States.

Where such a preliminary survey of the possibilities in a particular country indicates the desirability of further investigation in the country concerned or the initiation of negotiations in that country for the purchase or lease of the necessary property, the organization of a local company, etc., the *ability and willingness of American diplomatic and consular representatives* to furnish general advice and guidance on the basis of their intimate knowledge of the country may well contribute significantly to the success of the undertaking.

The question of financing foreign operations may well prove to be an important one for the small plant operator. In this connection the functions of the *Export-Import Bank of Washington* are worthy of special attention. The purpose of the Bank, as laid down by Congress, is to aid in "the financing and facilitating of exports and imports and the exchange of commodities between the United States or any of its Territories or insular possessions and any foreign country or the agencies or nationals thereof." In accordance with this directive and in cases where adequate private financing is not available, the Bank is prepared to participate, under the proper circumstances, in financing the acquisition in the United States of the capital equipment, materials, and engineering or other technical services which the small plant manager may require in establishing and maintaining his

plant abroad. Loans to American exporters and manufacturers are usually made on the basis of the credit standing of the borrower, supplemented by the guarantee of a foreign bank or government in the case of loans made without recourse to the applicant. Interest rates are uniform to all borrowers for any given type of credit. Also American equipment manufacturers often share in the financing of such operations.

President Truman's appeal in his inaugural address on Jan. 29, 1949, for "a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas" has given rise to considerable conjecture in some quarters concerning the form which this program may take. It seems clear, however, that the *investment of private American capital abroad* is expected to be one of the principal elements. What is more significant from the point of view of the prospective small plant operator is the possibility, revealed by Secretary of Commerce Charles Sawyer in a speech at Cape Henry, Va., on Apr. 24, 1949, that this new investment could be achieved through the establishment of a system of *United States government guarantees for new investments abroad*, supported by treaties between the United States government and foreign governments designed to create the proper "climate" for investment by securing reciprocity in the treatment of capital of foreign origin. Although the scope of such a guarantee system, as well as that of the Point IV program as a whole, has not yet been defined by Congress, it is probable, according to Secretary Sawyer, that some form of guarantee will be worked out, preferably a guarantee covering not only the convertibility into dollars of the original investment but also the risks of expropriation and war damage.

Some experience in this kind of government activity has already been gained under the *Foreign Assistance Act of 1948*, which authorized the Economic Cooperation Administration to guarantee the convertibility of new American investments in the participating countries at a cost of 1 per cent a year for the amount guaranteed and over a period of 14 years. Although the demand for this insurance during the first year of ECA operations was negligible, there is reason to believe that the enactment of a broader guarantee program, covering additional risks, might be received more enthusiastically.

Assuming that small plant operation also means operating with limited capital funds, the existence of facilities whereby the capital invested in such an operation abroad could be protected by certain United States government guarantees would seem to offer definite advantages to the small plant operator, since a substantial part of the risk accompanying foreign investment—a risk which American companies with large capital resources are relatively better able to bear—is effectively eliminated.

American industry, as great and important as it is today in all aspects, has been founded by the determined efforts of immigrants who opened shops and small plants on these shores. It may well be that in years to come not only the large companies but above all the small plant owners of our times may find new fields for their efforts as founders of small plants in other countries, where they would make their special products, use their unique know-how, and help to make life richer for many.



BIBLIOGRAPHY AND SUGGESTIONS FOR A SMALL PLANT MANAGEMENT LIBRARY

An occasional visit to the local library, chamber of commerce, Better Business Bureau, Dun & Bradstreet office, Veterans' Center, and similar sources of information will be useful.

NEWSPAPERS, PERIODICALS

Local newspaper.

National daily newspaper.

Professional-association magazine and bulletins.

Survey of Current Business. Monthly, and weekly supplements. Washington, D.C., Government Printing Office.

Trade magazine, covering the respective industry.

CENSUS REPORTS, STATISTICS

Classified State Directories. Obtainable from the state government offices or State Industrial Commissions.

Market studies are often valuable from local chambers of commerce.

Special market and distribution inquiries can be made at the nearest Field Office of the U.S. Department of Commerce, Small Business Division; at the main office of the same Division in Washington, D.C.; or at the State Industrial Commissions. For addresses see Chap. 4.

U.S. Census Bureau, Census of Distribution. Washington, D.C., Government Printing Office. Sold in various volumes covering Wholesale Trade, Retail Trade, Manufacturers' Sales, Consumer Market Data Handbook. The desired volume should be stated.

U.S. Census Bureau, Census of Manufactures. Washington, D.C., Government Printing Office. Sold in three volumes; one covers *all* industries, another, in special sections, covers each industry individually, and the third presents the statistics by states.

U.S. Department of Commerce, Statistical Abstract of the United States. Washington, D.C., Government Printing Office, annual. The abstracts are collections of all important statistics published by the United States government and other sources.

U.S. Department of Commerce, Small Business Division, *Industrial Small Business Series*, Washington, D.C., Government Printing Office.

- No. 16, Establishing and Operating a Metal Working Shop.
- No. 17, Establishing and Operating a Shoe Repair Business.
- No. 19, Establishing and Operating Your Own Business.
- No. 20, Establishing and Operating a Small Sawmill.
- No. 22, Establishing and Operating a Service Station.
- No. 24, Establishing and Operating an Automobile Repair Business.
- No. 27, Establishing and Operating a Painting and Decorating Contracting Business.
- No. 28, Establishing and Operating an Electric Appliance and Radio Shop.
- No. 29, Establishing and Operating a Retail Bakery.
- No. 31, Establishing and Operating a Hardware Store.
- No. 32, Establishing and Operating an Apparel Store.
- No. 33, Establishing and Operating a Dry Cleaning Business.
- No. 37, Establishing and Operating a Laundry.

Small Plant Management

- Briston, Willard Copy, *Graphic Presentation*. New York, Briston Associates, 1939.
- College textbooks on *Management, Organization, Principles of Organization and Management*, or similar titles.
- Gove, Michael, *101 Days to Be Your Own Boss*. New York, Arco Publishing Co., 1945.
- How to Start Your Own Business*. New York, Popular Science Publishing Co., 1945.
- Hutchinson, L. C., *Standard Handbook for Secretaries*. New York, McGraw-Hill Book Company, Inc., 1947.
- Lasser, J. K., *How to Run a Small Business*. New York, McGraw-Hill Book Company, Inc., 1950.
- Manual of Ideas for Small Business*. Pleasantville, N.Y., The Reader's Digest Association, Inc., 1946.
- National Office Management Association, *Manual of Practical Office Short Cuts*. New York, McGraw-Hill Book Company, Inc., 1947.
- Odell, Margaret, and Earl P. Strong, *Records Management and Filing Operations*. New York, McGraw-Hill Book Company, Inc., 1947.
- Selby, P. O., *The Principles of Business Operation Based upon the Small Independent Enterprise*. Kirksville, Mo., Research Press, 1937.
- U.S. Department of Commerce, *Check List for the Introduction of New Consumer Products*, Economic Series No. 41. Washington, D.C., Government Printing Office, 1944.
- U.S. Department of Commerce, *A Check List to Help You Introduce Your New Industrial Products*, Economic Series No. 53. Washington, D.C., Government Printing Office, 1946.
- U.S. Department of Commerce, *Outline for Making Surveys—Commercial, Industrial, Community, Regional, and Local*, Economic Series No. 34. Washington, D.C., Government Printing Office, 1944.

Small Business, Official Documents and Hearings

- U.S. Congress, *The Small Business Act*. Public Law 603, 77th Congress, 2nd Session, Chap. 404, S. 2250. An act to mobilize the productive facilities of small business in the interest of successful prosecution of the war, and for other purposes.
- U.S. House of Representatives, Special Committee on Small Business, *Hearings*, Jan. 13, 1942, to Feb. 12, 1944. Washington, D.C., Government Printing Office, 1942-1944. 4,498 pp., 2 vols.
- U.S. Senate, *Economic Concentration and World War II*. 79th Congress, 2d Session, Document No. 206. Report of the Smaller War Plants Corporation to the Special Committee to Study Problems of American Small Business. Washington, D.C., Government Printing Office, 1946.
- U.S. Senate, Special Committee to Study Problems of American Small Business, *Hearings* before the Special Committee (Murray Committee), May 19, 1941, to Oct. 26, 1943. Senate Record 298, Part 8, pp. 683-816, and others. Washington, D.C., Government Printing Office, 1941-1943. 4,192 pp., 2 vols.

Small Business, Complete Bibliographies

- Cleveland Public Library, Business Information Bureau, various bulletins on small business subjects. Mostly on books and subjects covering commercial aspects of management. Cleveland, Ohio.
- New York Public Library, *Branch Library Book News*, "Going into Business," May, 1945, Vol. 22, Nos. 5 and 6; "Staying in Business," April, 1948, Vol. 25, No. 4. These are book reference lists on either subject.
- Ohio State University, Bureau of Business Research, College of Commerce and Administration, *Information for Small Business*. Columbus, Ohio, 1946.
- U.S. Senate, Special Committee to Study Problems of American *Small Business*, *List of Articles, Pamphlets, Speeches, Books, Dealing with All Phases of Small Business*, U. S. Senate Print No. 4. Washington, D.C., Senate Office Building, 1941. 17 pp.

GENERAL MANAGEMENT SUBJECTS

The following subjects and books are listed because they were mentioned by the authors and possibly will aid in the first selection of books for a small library. More complete information can be obtained from the nearest public library.

Accounting, Controls

- Dohr, J. L., *Cost Accounting, Principles and Practices*. New York, The Ronald Press Company, 1946.
- Finney, H. A., *Principles of Accounting: Introductory, Intermediate, Advanced*, 3d ed. New York, Prentice-Hall, Inc., 1946 and 1948, 3 vols.
- Goetz, Billy E., *Management Planning and Control*. New York, McGraw-Hill Book Company, Inc., 1949.

- Heckert, J. B., *Business Budgeting and Control*. New York, The Ronald Press Company, 1946.
- Kennedy, R. D., *Financial Statements*. Chicago, Richard D. Irwin, Inc., 1947.
- Lang, Theodore (ed.), *The Cost Accountant's Handbook*. New York, The Ronald Press Company, 1944.
- Paton, W. A. (ed.), *Accountants' Handbook*. New York, The Ronald Press Company, 1943.

Community, Sociology

- Bogardus, E. S., *Sociology*. New York, The Macmillan Company, 1941.
- Community Service News*. Yellow Springs, Ohio. A publication, monthly.
- Horton, Charles, R. C. Angel, and L. J. Carr, *Introduction to Sociology*. New York, Charles Scribner's Sons, 1933.
- Knight, W. D., *Subsidization of Industry in Forty Selected Cities in Wisconsin, 1936-1946*. Madison, Wis., University of Wisconsin, School of Commerce, 1947.
- Lynd, Robert L., and Helen Merrell Lynd, *Middletown in Transition*, New York, Harcourt, Brace and Company, Inc., 1937.
- National Resources Committee, *Our Cities: Their Role in the National Economy*. Washington, D.C., Government Printing Office.
- Osborn, L. D., and M. H. Newmeyer, *The Community and Society*. New York, American Book Company, 1933.
- State Planning Commissions. Many states have special bureaus or commissions for community planning or development. Inquiries may be made on available studies or special conditions.
- University of Wisconsin, Bureau of Community Development, *Community Development Service Bulletins*. Madison, Wis., University Extension Division, bimonthly.
- University of Wisconsin, Bureau of Community Development, *Ways and Means for Strengthening the Position of Small Business*. Madison, Wis., University Extension Division.
- Zimmerman, Corle E., *The Changing Community*. New York, Harper & Brothers, 1938.

Economics, Finance, Government

- Chamber of Commerce of the United States of America, "Small Business, Its Place and Problems," *Postwar Readjustments*, Bulletin 7. Washington, D.C.
- Committee for Economic Development, *Meeting the Special Problems of Small Business. A Statement of National Policy*. New York.
- Fainsod, Merle, and Lincoln Gordon, *Government and the American Economy*. New York, W. W. Norton & Company, Inc., 1941.
- Faulkner, H. U., *American Economic History*. New York, Harper & Brothers, 1943.
- Faulkner, H. U., *American Political and Social History*, 5th ed. New York Appleton-Century-Crofts, Inc., 1948.

- Kaplan, A. D. H., *Small Business: Its Place and Problems*. New York, McGraw-Hill Book Company, Inc., 1948. Prepared under the auspices of the Committee for Economic Development.
- Lyon, Leverett, Myron Watkins, and Victor Abramson, *Government and Economic Life: Development and Current Issues of American Public Policy*. Washington, D.C., Brookings Institution, 1939, 1940, 2 vols.
- National Association of Manufacturers, *Financing Small Business. Its Economic Position and Financial Requirements*. New York.
- Newbury, F. D., *The American Economic System*. New York, McGraw-Hill Book Company, Inc., 1950.
- U.S. Department of Commerce, Bureau of Foreign and Domestic Commerce, *Economic Series*. Washington, D.C., Government Printing Office.
- No. 34, Outline for Making Surveys—Commercial, Industrial, Community, Regional, and Local, 1944.
- No. 47, Guide for Local Industrial Production—Economic, Small Business, 1947.

Engineering, Production, Technical Research

- Alford, L. P., and W. Bangs, *Production Handbook*. New York, The Ronald Press Company, 1946.
- American Society of Tool Engineers (Frank W. Wilson, ed.), *Tool Engineers Handbook*. New York, McGraw-Hill Book Company, Inc., 1949.
- Barnes, Ralph M., *Motion and Time Study*. New York, John Wiley & Sons, Inc., 1949.
- Barnes, Ralph M., *Work Methods Manual*. New York, John Wiley & Sons, Inc., 1944, or Dubuque, Iowa, Wm. C. Brown, 2d ed. 1949.
- Gomberg, William, *A Trade Union Analysis of Time Study*. Chicago, Science Research Associates, 1948.
- Handbooks for *chemical, civil, electrical, and quite a few other engineering sciences exist*. For reference see Public Library
- Marks, Lionel L., *Mechanical Engineers' Handbook*, 4th ed. New York, McGraw-Hill Book Company, Inc., 1941. Presents both fundamental theory and the data of experiment and experience in that range of subjects which is usually covered by mechanical engineers.
- Maynard, H. B., and G. J. Stegemerten, *Guide to Methods Improvement*. New York, McGraw-Hill Book Company, Inc., 1944.
- Maynard, H. B., G. J. Stegemerten, and J. L. Schwab, *Methods-Time Measurement*. New York, McGraw-Hill Book Company, Inc., 1948.
- Nash, Ben, *Developing Marketable Products and Their Packagings*. New York, McGraw-Hill Book Company, Inc., 1945.
- Reiss, Otto F., *How to Develop Profitable Ideas*. New York, Prentice-Hall, Inc., 1945.
- Staniar, William, *Plant Engineering Handbook*. New York, McGraw-Hill Book Company, Inc., 1950.
- Yates, Raymond F., *2100 Needed Inventions*. New York, Alfred Funk, Inc., 1942.

Labor, Employee-Management Relations, Unions

- American Management Association, *The Foreman's Basic Reading Kit; The Management Leader's Manual; The Supervisor's Management Guide*. New York. The latest and tested know-how for supervisors, foremen, and operating executives.
- Barbash, Jack, *Labor Unions in Action*. New York, Harper & Brothers, 1948.
- Greenman, R. C., *Getting Along with Unions*. New York, Harper & Brothers, 1947.
- Halsey, G. D., *Handbook of Personnel Management*. New York, Harper & Brothers, 1947.
- Hill, L. H., *Pattern for Good Labor Relations*. New York, McGraw-Hill Book Company, Inc., 1947.
- Johnson, F. H., R. W. Boise, Jr., and D. Pratt, *Job Evaluation*. New York, John Wiley & Sons, Inc., 1946.
- Jones, Philip W., *Practical Job Evaluation*. New York, John Wiley & Sons, Inc., 1948.
- Louden, J. Keith, *Incentive Wages*. New York, John Wiley & Sons, Inc., 1947.
- Stigers, M. F., and E. G. Reed, *The Theory and Practice of Job Rating*. New York, McGraw-Hill Book Company, Inc., 1944.
- United Electrical, Radio and Machine Workers of America, *U.E. Guide to Wage Payment Plans, Time Study, and Job Evaluation*. New York, 1943.
- U.S. Department of Labor, *United States Dictionary of Occupational Titles*. Washington, D.C., Government Printing Office.
- Werne, Benjamin, *The Law of Labor Relations*. New York, The Macmillan Company, 1949.
- Werne, Benjamin, *Management's Guide to Labor Contracts*. New York, Funk & Wagnalls Company, 1949.

Laws, Regulations, Taxes

- Bowers, Richard S., *Business Law*. Boston, Wetherbee-Rich, 1949.
- Canfield, D. T., and J. H. Bowman, *Business, Legal and Ethical Phases of Engineering*. New York, McGraw-Hill Book Company, Inc., 1949.
- Federal Tax Handbook*. New York, Prentice-Hall, Inc., annual publication.
- Gold, H., and L. Hainsoff, *Fairchild's Income Tax Guide for Retailers*. New York, Fairchild Publications Co., 1948.
- Kling, Samuel G., *Your Legal Rights*. Philadelphia, The Blakiston Company, 1945.

Management

- Alford, L. P., *Management's Handbook*. New York, The Ronald Press Company, 1924.
- Barnes, Ralph M., *Bibliography of Industrial Engineering and Management Literature*, 5th ed. Dubuque, Iowa, W. C. Brown Co., 1949.
- College textbooks on *Management, Organization, Principles of Organization and Management*, or similar titles.

- Emerson, Harrington, *The Twelve Principles of Efficiency*. New York, The Engineering Magazine Company, 1911, 1913.
- Ford, Henry, *My Life and Work*. New York, Doubleday Company, Inc., 1923.
- Hempel, Edward H., *Top-Management Planning*. New York, Harper & Brothers, 1945 and 1947.
- Kimball, D. S., and D. S. Kimball, Jr., *Principles of Industrial Organization*, 6th ed. New York, McGraw-Hill Book Company, Inc., 1947. See also 1913 or 1919 editions.
- Mooney, James D., *Principles of Organization*. New York, Harper & Brothers, 1939.
- Taylor, Frederick W., *Scientific Management. Shop Management. Testimony*. New York, Harper & Brothers, 1947. These are reprints of the first texts on management, originally published by the American Society of Mechanical Engineers.

Selling, Distribution, Exports

- Aspley, J. C., *Sales Manager's Handbook*. Chicago, Dartnell Corporation, 1945.
- Buckley, Earle A., *How to Sell by Mail*. New York, McGraw-Hill Book Company, Inc., 1938.
- Eldridge, F. R., *Export and Import Practice*. U.S. Department of Foreign and Domestic Commerce, Trade Promotion Series No. 175. Washington, D.C., Government Printing Office, 1938.
- Exporter's Encyclopedia*. New York, Thomas W. Ashwell & Co., annual editions. Up-to-date information on all aspects of export activities and countries, and service bulletins.
- Goldenthal, Irving, *How to Buy and Merchandise Profitably*. New York, Better Merchandising Institute, 1946.
- Graham, Irving, *How to Sell through Mail Order*. New York, McGraw-Hill Book Company, Inc., 1949.
- Horn, Paul V., *International Trade Principles and Practices*. New York, Prentice-Hall, Inc., 1946.
- Kaylin, Edward, and Allan Wells, *Simplified Sales Promotion for Retailers*. New York, National Dry Goods Association, 1940.
- Maynard, H. H., *Principles of Marketing*. New York, The Ronald Press Company, 1946.
- Preston, Harold P., *Successful Mail Selling*. New York, The Ronald Press Company, 1942.
- Simmons, Harry, *Practical Sales Management*. New York, Prentice-Hall, Inc., 1946.
- Standard Ratios for Retailing*. New York, Dun & Bradstreet, Inc., 1940.
- U.S. Department of Commerce, *Foreign Commerce*, weekly, and *Foreign Trade Statistics*, monthly. Also *International Reference Service*, *World Trade in Commodities*, and other publications. Washington, D.C., Government Printing Office.



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